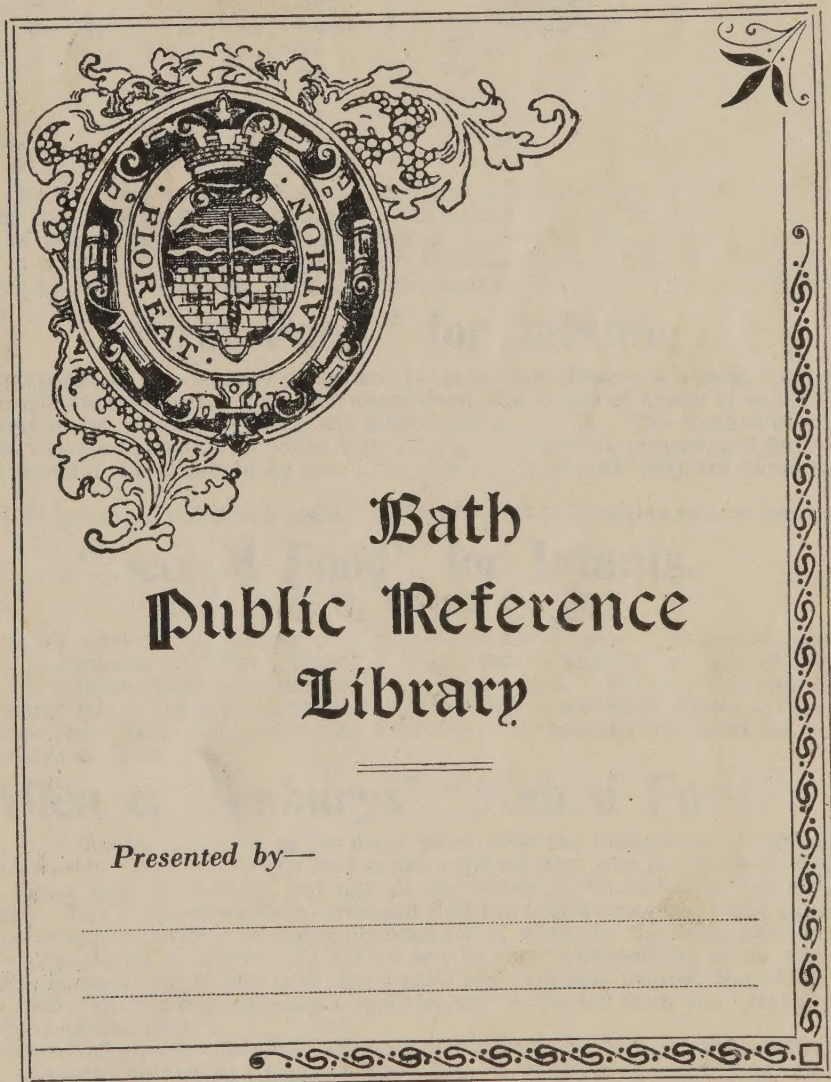


THE
YEAR-BOOK OF
TREATMENT
FOR 1897.

A Rational Dietary for Infants.

THIS series of Foods has been designed to supply for the first time a need in the rational dietary of infants fed by hand. None of the substitutes for mother's milk have hitherto been physiologically accurate. Especially is this so with the diluted cow's milk given usually in the earlier days of infant life.



2159-49

PAMPHLET WITH TESTIMONIALS ON APPLICATION.



22101683157

London.

D STREET, E.C. West
NGVA AND KJERSTAD,
OR AUSTRALIA—484,

DR. RENNER'S ESTABLISHMENT

FOR

VACCINATION

WITH

CALF LYMPH,

186, MARYLEBONE ROAD, LONDON, N.W.

PRICE OF CALF LYMPH.

TUBES	{	Large	...	...	...	...	2s. each, or 3 for 5s. 6d.
		Small	...	...	...	...	1s. each, or 3 for 2s. 9d.
SQUARES		...	...	...	...	...	2s. 6d. each.

Registered Telegraphic Address: "Vaccine, London."

Sent on receipt of remittance addressed to the Manager of the Establishment.




STILL.

**THE
ALPHA-BRAND
MALVERN**

**THE PUREST
OF ALL
SPRING WATERS**
(STILL and SPARKLING)

BOTTLED AT
THE HISTORIC SPRING
BY THE SOLE LESSEES,
W. & J. BURROW,
MALVERN.

 In ordering be careful to specify
"BURROW'S ALPHA BRAND."

Six Dozen sent Carriage Paid.



SPARKLING.

A
DELICIOUS
FAT
FOOD.

Maltine

COD LIVER OIL
WITHOUT ITS
DISAGREEABLE
FEATURES.

Contains a satisfactory proportion of the best Cod Liver Oil rendered easy of assimilation and acceptable to the palate by perfect incorporation with a palatable, digestive food—"MALTINE." The question of a "substitute for Cod Liver Oil" (which has not yet been satisfactorily settled) need not disturb the physician who prescribes "MALTINE" with Cod Liver Oil. It is not only the most palatable and digestible Fat-Food, but it contains the specific properties of Cod Liver Oil, deprived of all disagreeable features, though un-

**Maltine" with
Cod Liver Oil
compared with
Emulsions.**

altered as regards chemical constitution. This last is a most important point and differentiates "MALTINE" with Cod Liver Oil unmistakably from the various Emulsions of Cod Liver Oil. As

is well known, the method of procedure in their case, is to saponify the oil with an alkali. The result of this chemical treatment is to completely change the characteristics of the oil and, probably, to destroy some of its most important factors. These emulsions, too, are broken up by the addition of acid, and consequently, when acted upon by the gastric juice, the oil is liberated, giving rise to all the inconveniences that follow the ingestion of the plain oil.

**Advantages of
"Maltine" with
Cod Liver Oil.**

The union of the oil with the "MALTINE" is effected by a special mechanical process. The combination is stable, being unaffected by acid or alkaline reagents. The chemical constitution of the oil is unaltered.

It is the most palatable preparation of Cod Liver Oil. It never occasions the slightest inconvenience, but on the contrary, is readily tolerated and appears to be thoroughly assimilated.

The various advantages of "MALTINE" with Cod Liver Oil have secured for it the general support of medical men, who can confirm from their own experience the dictum of the *British Medical Journal*:

"Patients unable to tolerate the purest and most carefully prepared Cod Liver Oil can readily digest and assimilate it when combined with 'Maltine.'"

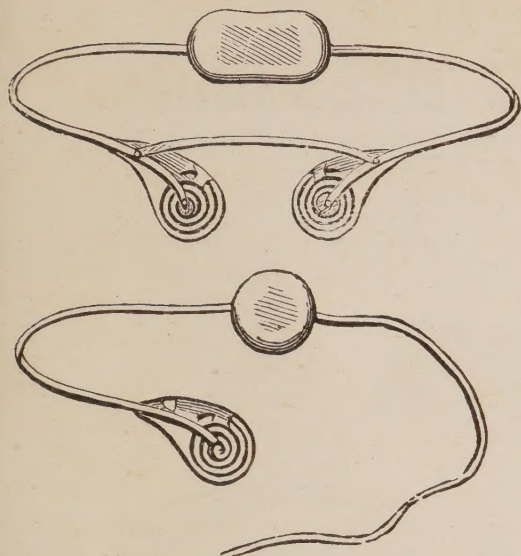
In prescribing please specify "MALTINE COMPANY."

Sample Bottles free and carriage paid to Medical Men.

THE MALTINE MANUFACTURING CO., LTD.,

24 and 25, Hart Street, Bloomsbury, London.

The Latest Improvement in Trusses.



WM. COLES & CO.,

INVENTORS AND MAKERS

OF THE

**Spiral Spring
Truss.**

225, PICCADILLY, LONDON, W. (late 3, Charing Cross),

Two Doors from "The Criterion."

PARTICULARS, &c., GRATIS BY POST.

Established 1819.

BRIDGES' EMULSION OF PURE COD LIVER OIL, WITH LACTOPHOSPHATES.

SYNONYM: *Emulsio Ol. Morrhue cum Lactophosph.* (Bridges.)

Containing 50 per cent. of Pure Cod Liver Oil with a medium dose of the Lactophosphates of Lime and Soda. The agreeable taste and digestive properties of this Emulsion enable children and delicate patients to easily assimilate it, and it has been successfully prescribed by eminent Physicians where all other preparations of Cod Liver Oil have disagreed. Physician's sample bottle sent free on application. May be obtained through any Chemist, or from the SOLE MANUFACTURER— [Price, 2/6 per bot.

CHARLES BRIDGES,
PHARMACEUTICAL CHEMIST,
24, SLOANE STREET, LONDON.

FERRIS & COMPANY'S

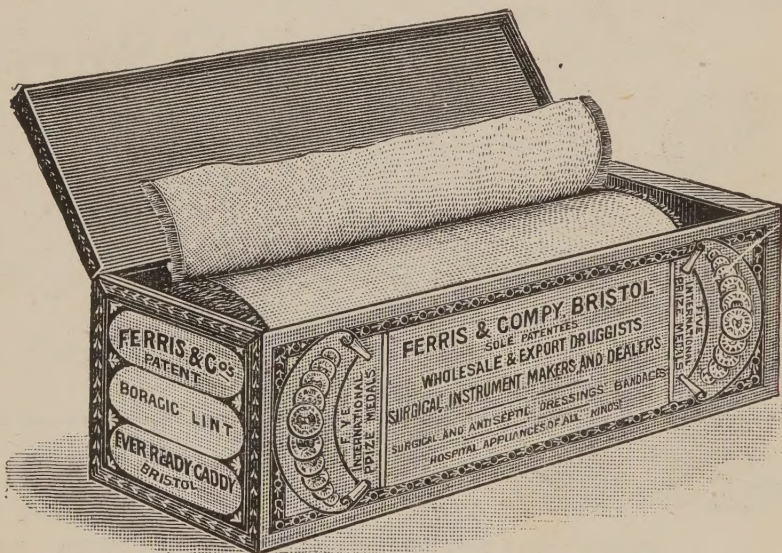
PATENT EVER-READY

CADDIES AND DRESSINGS.

The Newest and Most Approved Method of Storing Surgical Dressings and Plasters.

The antiseptic properties of dressings stored in these Caddies are retained unimpaired, and the dressings themselves are preserved from contamination by germs or other septic matter. When any dressing is to be used the exact quantity required can be unrolled and cut off in a moment, whilst the remainder of the roll is kept perfectly clean, and is not liable to suffer deterioration by exposure to the air.

Lints, Wools, Gauzes, etc.



Plasters, Protectives, Gamgee Tissue, etc.

ECONOMISE MONEY, TIME, SPACE, AND MATERIAL.

The EVER-READY METHOD has been adopted by many of the leading Hospitals, Asylums, Colleges, &c., and a large number of the Medical Profession at home and abroad.

NUMEROUS UNSOLICITED TESTIMONIALS.

"Enclosed find cheque for Caddies with contents. I never experienced until now what it was to have comfort in dressing surgical cases at home.

" ——— M.D., B.Sc., C.M.

"April 15th, 1896."

"Most useful, and a vast improvement on the old method of keeping the necessary dressings.

" ——— M.R.C.S., L.R.C.P.

"April 13th, 1896."

A Caddy can be refilled when the contents are exhausted, the "refills" being sent out well secured for storing.

THE EVER-READY CABINET for holding a set of Caddies is made in three stock sizes, with drawer for Bandages, &c.

Write for Price List and Illustrated Descriptive Pamphlet.

Our List now includes upwards of 130 varieties of the Cylinder-wound Dressings.

SOLE PATENTEES:

FERRIS & COMPANY, BRISTOL.

The Kepler Malt Products.

Kepler Extract of Malt.

"The Kepler Extract of Malt is sound and reliable."—*British Medical Journal*.

The manufacture of Malt Extract is one of the most important branches of pharmacy, and carries with it great responsibilities. It is well known that this preparation is often depended upon by physicians as a dietetic aid during periods of grave significance, and it is in view of this fact that we have never ceased in our earnest and whole-hearted endeavours to prepare as potent and reliable a product as possible.

It is a matter of profound regret to us, no less than to those physicians who have been disappointed by the use of inferior preparations, that the constantly-increasing use of malt preparations has led to the introduction of inferior extracts. The sharp distinction between such preparations and the Kepler Extract of Malt does not require emphasising. It has been amply recognised from the first by both the medical profession and the medical press. All authorities throughout the world fully

acknowledge the justice of our claim that the Kepler Extract of Malt is the most palatable and potent preparation now offered to the profession, and that it contains the full diastasic value obtainable from the finest winter-malted barley.

Supplied in Bottles at 1s. 8d. and 3s. each.

Kepler Solution of Cod-liver Oil in Malt Extract.

"The taste of the oil is agreeably disguised, its nutritive qualities are greatly increased, and it is rendered easy of digestion."—*British Medical Journal*.

The report of the *British Medical Journal* quoted above effectively summarises some of the characteristics of the Kepler Solution of Cod-liver Oil in Malt Extract. Pleasant flavour, increased nutritive powers, and ready assimilability are some of the more important properties possessed in their entirety by Kepler Solution alone.

Such sterling qualities have not been secured easily. They are the outcome of careful progressive study of methods and material during a period of many years.

The Kepler Solution is not merely an emulsion. It is a solution of the oil in Kepler Malt Extract, a molecular incorporation of one food in another of tried efficacy as a digestive agent. Administered in this manner, the assimilation of the oil is secured, and, in the words of the report of the *Medical Press and Circular*, "the Kepler Solution is the most palatable and easily digested of any form for administering cod-liver oil."

Supplied in Two Sizes at 1s. 8d. and 3s. each.

BURROUGHS, WELLCOME & CO., Snow Hill Buildings,
London, E.C.

AUSTRALASIAN ADDRESS: 108, PITT ST., SYDNEY, N.S.W.

Cable and Telegraphic Address: "BURCONE, LONDON."

Hypodermic “Tabloids.”

The hypodermic is the quickest method of securing the physiological action of drugs. It is adopted for this reason in emergencies, where it becomes of the highest importance that drugs should be pure and reliable, of the utmost nicety of dose, and ready instantly in a soluble and undecomposed form.



The Hypodermic “Tabloids” (B. W. & Co.) possess all these qualities and none of the disadvantages of ready-made solutions, which, even when recently prepared, may be unreliable as to strength, or septic and irritating. The “tabloids” keep unaltered for many years in any climate, are free from irritating salts, and are readily soluble. We are now supplying the following hypodermic agents in “tabloid” form:—

Aconitine Nitrate	... 1-260, 1-130 gr.	*Morphine Sulphate	... 1-2 gr. }
Apomorphine Hydrochlorate	1-15, 1-10 gr.	Atropine Sulphate	... 1-100 gr. }
Atropine Sulphate	1-150, 1-100, 1-60 gr.	Morphine Sulphate	... 1-3 gr. }
*Caffeine Sodio-salicylate	... 1-3 gr.	Atropine Sulphate	... 1-120 gr. }
Cocaine Hydrochlorate	1-10, 1-6, *1-4, *1-2 gr.	Morphine Sulphate	... 1-4 gr. }
Cocaine Co. (Strong, normal, and weak local anæsthetic)		Atropine Sulphate	... 1-150 gr. }
Codeine Phosphate	... 1-4 gr.	Morphine Sulphate	... 1-6 gr. }
Colchicin	... 1-100 gr.	Atropine Sulphate	... 1-180 gr. }
*Cornutine Hydrochloride	... 1-60 gr.	Morphine Sulphate	... 1-8 gr. }
Curare	... 1-12 gr.	Atropine Sulphate	... 1,200 gr. }
Digitalin	... 1-100 gr.	Morphine Sulphate	... 1-12 gr. }
Ergotin Citrate	... 1-200, 1-100 gr.	Atropine Sulphate	... 1,250 gr. }
Eserine Salicylate	... 1-100 gr.	Nitroglycerine	... 1-250 gr.
*Eucaine Hydrochlorate	... 1-1, 1 gr.	†Pilocarpine	... 1-10 gr.
Homatropine Hydrochlorate	... 1-250 gr.	*Quinine Bi-hydrochlorate	... 3 gr.
Hydrarg. Perchlor.	... 1-60, 1-30 gr.	*Quinine Hydrobrom.	... 1-2 gr.
Hydrarg. Soziodol	... 1-4 gr.	Quinine Hydro-Chlor-Sulphate	2 gr.
Hyoscine Hydrobrom.	... 1-200, *1-75 gr.	Sclerotic Acid	... 1, 1-2 gr.
*Hyoscyamine Sulphate	... 1-50, 1-20 gr.	Sodium Phosp. Co.	... 1-2 gr.
Morphine Bimeconate	1-8, 1-6, 1-4, 1-3 gr.	*Sparteine Sulphate	... 1-2 gr.
Morphine Hydrochlor.	... 1-6, 1-4 gr.	Strophanthin	... 1-500 gr.
Morphine Sulphate	1-12, 1-8, 1-6, 1-4, 1-3, *1-2, *1 gr.	Strychnine Nitrate	... 1-15, 1-10 gr.
		Strychnine Sulphate	1-150, 1-100, 1-60, 1-30 gr.
		Stypticin (Cotarnin Hydrochlorate)	¼ gr.

* Supplied in tubes of non-actinic glass, each containing 20 “tabloids” (except those marked with an asterisk, which contain only 12), at 6d. and 8d. per tube.

† Prices on request.

BURROUGHS, WELLCOME & CO., Snow Hill Buildings, London, E.C.

Australasian Address: 108, PITT ST., SYDNEY, N.S.W.

Cable and Telegraphic Address: “BURCOME, LONDON.”

Scientific Products.

Wyeth Beef Juice.

At a time when practitioners are fully aware of the fact that beef extracts prepared by the hot process are devoid of those albuminous constituents of meat which are essential to nutrition, the Perfected Wyeth Beef Juice, a product expressed in the cold from the choicest lean beef, is receiving an increased amount of attention from medical men and the professional press.

The following report is taken from the *Lancet* of August 15th, 1896:—

“The Perfected Wyeth Beef Juice has received critical attention in the *Lancet* laboratory, and the results obtained on analysis gave indisputable evidence of the excellence of the preparation, containing as it does not only the albuminous principles of beef in an active and soluble form, but in the condition in which they occur in the freshly-expressed juice of beef itself. The preparation has recently been improved in regard to concentration, a step which entitles it to rank as one of the most powerful stimulating foods of this type which are available.”

In the issue of the *British Medical Journal* of August 8th, 1896, this report occurs:—

“Containing all the characters of the finest beef, rich in serum albumen and palatable, this highly-concentrated product is a good model of what such preparations should be, and is much used as a tonic food in sickness and all stages of convalescence.”

*Wyeth Beef Juice is supplied to the medical profession at
2s. 10d. per bottle.*

“Hazeline.” (A Simple Drug.)

“Hazeline” is now generally accepted by the medical profession as the most active, reliable, and agreeable preparation of the green witch hazel (*Hamamelis Virginica*). The whole of the volatile active principles can be obtained from the plant in its fresh condition only, and best by a process of distillation. “Hazeline,” the result of such distillation, is water-like in appearance, with an aromatic, pleasantly-fragrant odour. It possesses well-marked anodyne, hæmostatic, and antiseptic properties. Internally it is employed in hæmoptysis, hæmatemesis, and other hæmorrhages, and as a local application for external bleeding it is spoken of most favourably. It is also used as a spray in granular pharyngitis and catarrhal congested throat.

*“Hazeline” is supplied to the medical profession at 1s. 2d. and
3s. 6d. per bottle.*



BURROUGHS, WELLCOME & CO., Snow Hill Buildings,
London, E.C.

Australasian Address: 108, PITT ST., SYDNEY, N.S.W.

Cable and Telegraphic Address: “BURCOME, LONDON.”

Pharmaceutical Products.



Blaud Pill "Tabloids" (B. W. & Co.).

This effective method of administering nascent ferrous carbonate is based upon the definitely-ascertained fact that exact proportions of ferrous sulphate and alkaline carbonate, carefully dried, finely powdered, intimately incorporated, lightly compressed, and preserved from oxidation by a special process of coating with sugar, will keep for years without change, and form ferrous carbonate even in the presence of the free acid of the gastric juice. Combinations of these "tabloids" with Arsenic 1/64 gr., Aloin 1/20 gr., Arsenic and Strychnine 1/100 gr. each, and Arsenic, Aloin, and Strychnine, are also prepared.

Cascara "Tabloids" (B. W. & Co.).

These "Tabloids" and their combinations are prepared with an extract made from carefully-selected and fully-matured bark. By a special process the laxative principles are retained, whilst the constituents which cause discomfort and griping pain are removed in the process of manufacture.

Quinine "Tabloids" (B. W. & Co.).

"Tabloids" of Quinine, ranging from $\frac{1}{2}$ to 5 grains in weight, prove a most convenient method of administering this drug in a pleasant and active form. The insolubility of the ordinary quinine pill is a by-word, and contrasts markedly with the rapid disintegration of the "tabloid" in the presence of moisture.

Emol-Keleet.

Emol-Keleet is a natural product, unsophisticated in any way, but refined and purified by various intricate processes. It is a delicate, soft, impalpable powder, possessing a slight pink tint due to the presence of a trace of oxide of iron. Its other constituents are steatite, silica, and alumina, with a minute quantity of lime. Emol-Keleet possesses exceptional softening properties when applied to hard or horny conditions of the skin, and many cases are reported of its successful use in keratosis, eczema, etc. As a dusting powder it appears to be especially valuable, showing marked absorbent, anti-pruritic, and emollient qualities, which, together with the fact that it is absolutely stable, make it an ideal diluent for such antiseptic agents as loretin, dermatol, iodoform, boracic acid, etc.

The Lancet, referring to Emol-Keleet, says:—"On account of its remarkable velvety smoothness, it should possess a unique value as a dusting powder in cutaneous diseases, etc., and for allaying irritation we have not examined a more unctuous earth."

The Medical Times reports that "Emol-Keleet is a dusting powder with marked soothing and healing properties."

Supplied to the Medical Profession at 9d. per box.

BURROUGHS, WELLCOME & Co., Snow Hill Buildings,
London, E.C.

AUSTRALASIAN ADDRESS: 108, PITT ST., SYDNEY, N.S.W.

Cable and Telegraphic Address: "BURCOME, LONDON."

Lewis's Standard Publications.

- Roberts' Handbook of Medicine. 9th Edition. 21s.
 Crookshank's Text-book of Bacteriology. 4th Edition. 21s. *nett*.
 Goodall and Washbourn's Infectious Diseases. With Plates. 15s.
 Harris and Beale's Pulmonary Consumption. 10s. 6d.
 Gould's Student's Medical Dictionary. 10th Edition. 14s. *nett*.
 Colman's Section Cutting and Staining. 2nd Edition. 3s. 6d.
 Corfield's Defective House Sanitation. Illustrations. 2s.
 Windle and Manners-Smith's Surface Anatomy. 2nd Edition. 3s. 6d.
 Murray's Rough Notes on Remedies. 2nd Edition. 3s. 6d.
 Abbott's Principles of Bacteriology. 3rd Edition. 12s. 6d. *nett*.
 Pritchard's Diseases of the Ear. 3rd Edition. 6s.
 Barrett's Dental Surgery. 3rd Edition. *Just ready*.
 Swanzy's Diseases of the Eye. 6th Edition. *Immediately*.
 Ringer's Handbook of Therapeutics. 13th Edition. *In preparation*.
 Power's Surgical Diseases of Children. 10s. 6d.
 Duhrssen's Manual of Gynæcological Practice. 6s.
 Onodi's Atlas of the Nasal Cavity. Plates. 6s. *nett*.
 Schimmelbusch's Aseptic Treatment of Wounds. 5s.
 Carter's Elements of Practical Medicine. 7th Edition. 10s.
 Powell's Diseases of the Lungs and Pleuræ. 4th Edition. 18s.
 Hall's Diseases of the Nose and Throat. 10s. 6d.
 Anderson's Medical Nursing. 2nd Edition. 2s. 6d.
 Parkes' Infectious Diseases, Notification and Prevention. 2s. 6d.
 Goodhart's Common Neuroses. 2nd Edition. 3s. 6d.
 Crocker's Diseases of the Skin. 2nd Edition. 24s.
 Legg's Guide to the Examination of the Urine. 7th Edition. 3s. 6d.
 Boyce's Text-book of Morbid Histology. *Coloured Plates*. 31s. 6d.
 Jones' Medical Electricity. 2nd Edition. 10s. 6d.
 Buxton's Anæsthetics. 2nd Edition. 5s.
 Wethered's Medical Microscopy. Illustrations. 9s.
 Skene's Diseases of Women. 2nd Edition. 28s.
 Parkes' Hygiene and Public Health. 4th Edition. 10s. 6d.
 Lewis's Pocket Medical Vocabulary. 2nd Edition. 3s. 6d.
 Murrell's What to do in Cases of Poisoning. 8th Edition. 3s. 6d.
 Lusk's Science and Art of Midwifery. 4th Edition. 18s.
 Lewers' Diseases of Women. 4th Edition. 10s. 6d.
 Lewis's Temperature Charts. 50s. per 1,000 ; 7s. per 100 ; or 1s. per doz.
 Lewis's Nursing Charts. 20 for 1s. ; 100, 3s. 6d. ; 500, 14s. ; 1,000, 25s.
 Lewis's Diet Charts. 5s. per packet of 100 charts, post free.
 Chart for Recording the Examination of Urine. 1s. per 10.

*** Catalogue of Mr. LEWIS's Publications post free on application.*

LONDON: H. K. LEWIS, 136 GOWER STREET, W.C.

DIABETES.

BONTHRON'S DIABETIC BREAD AND BISCUITS.

DR. PAVY, in his recent work on "DIABETES," p. 245, says :—

"Mr. Bonthron, of 106, Regent Street, has recently succeeded in producing some Gluten Biscuits and Bread which are more eatable than anything of the kind I have ever yet met with. The Biscuits present somewhat the character of a cracknel; they eat short and crisp, and are readily reducible in the mouth; have no unpleasant taste; and, consumed with other food, possess the power of cleansing the palate. The Bread is moist, and will keep good for about ten days. Its consumption, therefore, involves a frequent supply. It serves to increase the variety at the command of the Diabetic; and, independently of this, possesses the advantage of presenting an approach to the condition of ordinary bread."

The LANCET, under the head of Analytical Records, says :—

"We have received from the above well-known maker no less than six different samples of Biscuits, &c., intended for dietetic treatment. No. 1 is called the 'Diabetic Biscuit,' and contains much gluten and very little starch. No. 2 is the 'Regent Biscuit,' made from gluten and prepared bran. No. 3 is an 'Almond Biscuit,' and the rest are modifications of the first two. They are excellent preparations; and though, of course, they are not so palatable as if they contained the normal quantity of starch, they can be eaten without difficulty or repulsion. Indeed, it is not easy to see how they could be improved."

The Bread is made fresh daily, but its keeping quality is such that a week's supply can be forwarded in one delivery. The Biscuits, if kept in a dry warm place, will remain crisp for a long time.

While the Bread, Rusks and larger biscuits form the staple dietary, Messrs. Bonthron recommend, as a change of diet, their Cressini, Almond, Sponge Cakes—varied in flavour, Sponge Drops, Almond Shoots, Brazils, and other varieties.

Price Lists on application.

The **Gluten** Porridge Meal, recently introduced, with directions for making, makes an appetising dish.

Gluten Flour, 2s. 6d. per lb. Biscuits, 3s. 6d. per lb. Loaves, 9d. each.

Bran, 1s. per lb. *The Loaves can be sent through the post, 1s. each.*

It is with much satisfaction that Messrs. BONTHRON & Co. are able to state that they are now regularly supplying customers who have used these preparations for years, and from whom they receive testimony of the great advantage they continue to derive from them.

For our Gluten preparations the highest award—Silver Medal—was given at Edinburgh.

As Gluten preparations are costly, and are best when freshest, it is cheapest and best to communicate direct with the Makers,

BONTHRON & CO., 106, Regent St., London.

Charles Griffin & Company's Standard Text Books.

NEW EDITION. REVISED AND PARTLY RE-WITTEN.

CLINICAL DIAGNOSIS:

The Chemical, Microscopical, and Bacteriological
Evidence of Disease.

By PROF. VON JAKSCH, of Prague. Translated from the Fourth German
Edition by JAS. CAGNEY, M.A., M.D. **Third English Edition,**
with additions and many new Illustrations. [At Press.

"A striking example of the application of the methods of science to medicine. . . . A standard
work. . . . as trustworthy as it is scientific."—*The Lancet*.

"Supplies a real want. . . . Rich in information, accurate in detail, lucid in style."—*British
Medical Journal*.

Clinical Medicine. A Practical Handbook for Practitioners
and Students. By JUDSON BURY, M.D., F.R.C.P., Senior Assist-
ant Physician, Manchester Royal Infirmary. In large 8vo, handsome
cloth, with numerous Illustrations and Coloured Plate, 21s.

"This is the latest of the splendid series of text-books which Messrs. Charles Griffin & Company
have been the means of placing in the hands of the profession. The volume will maintain the re-
putation of its predecessors, and we heartily congratulate Dr. Judson Bury on the excellence
of his book and the sterling contribution to medical literature which, in its publication, he has
made."—*Dublin Medical Journal*,

Fibroid Diseases of the Lung, including Fibroid Phthisis.

By SIR ANDREW CLARK, Bart., M.D., LL.D., F.R.S., and
W. J. HADLEY, M.D., and ARNOLD CHAPLIN, M.D., Assistant
Physicians, City of London Hospital for Diseases of the Chest. 21s. net.

"A volume which will be highly valued by every clinical physician."—*British Medical
Journal*.

Diseases of the Skin. By T. McCALL ANDERSON,
M.D., Professor of Clinical Medicine in the University of Glasgow.
SECOND EDITION, Revised and Enlarged. 25s.

"Beyond doubt the most important work on skin diseases that has appeared in England for
many years."—*British Medical Journal*.

Diseases of the Heart (The Diagnosis of). By
A. ERNEST SANSOM, M.D., F.R.C.P., Physician to the London
Hospital, &c. With 13 Plates. 28s.

"Dr. Sansom has opened to us a treasure-house of knowledge."—*Practitioner*.

"We warmly commend Dr. Sansom's book to all engaged in clinical work."—*The Lancet*

Gout (A Treatise on). By SIR DYCE DUCKWORTH,
M.D. Edin., F.R.C.P., Physician to, and Lecturer on Clinical
Medicine at, St. Bartholomew's Hospital. 25s. (French and German
Versions may also be had.)

"At once thoroughly practical and highly philosophical. Contains an enormous amount of
information."—*Practitioner*.

Rheumatism and Rheumatoid Arthritis. By
A. E. GARROD, M.A., M.D. Oxon., Assistant Physician to the West
London Hospital, &c. 21s. (A French Version may also be had.)

"Will take rank with the best treatises on special subjects in the language."—*Dublin Medical
Journal*.

Complete Catalogue post free on Application.

LONDON:

CHAS. GRIFFIN & CO., LTD., EXETER STREET, STRAND.

ADVERTISEMENTS.

"An improvement on the old fashioned Violet Powders."—*British Medical Journal.*



IN BOXES, 1/- EACH, OF ALL CHEMISTS.
LARGE BOTTLES, FOR HOSPITAL AND FAMILY USE, 5/- EACH.

Proprietors: JAMES WOOLLEY, SONS & Co., Ltd., MANCHESTER.

AN
ANTISEPTIC DUSTING POWDER
PREPARED WITH BORIC ACID.

For use in cases of ENURESIS
and for NURSERY and TOILET
USE generally.

"Entirely deserves the excellent
reputation it has gained."—

Practitioner.

HIGH SHOT HOUSE,
ST. MARGARET'S, TWICKENHAM.

Resident Medical Superintendent—

F. H. BROMHEAD, B.A., M.B.Camb., M.R.C.S.Eng., &c.

FOR Gentlemen suffering from Alcoholism, Morphinism, and
the abuse of Drugs. Patients admitted under the Acts
and privately. Terms, 2½ to 5 Guineas.

For full particulars apply to the Medical Superintendent.

LONDON FEVER HOSPITAL,
ISLINGTON, N.

SUFFERERS FROM INFECTIOUS FEVERS are
Received for Treatment

(a) In the Wards, on payment of **£3 3s.** each, which is equal to
about a fourth of their cost, and covers the whole period during
which they are under treatment (the balance falling upon the
Funds of the Institution); and

(b) In Private Rooms at **£3 3s.** a week.

*Domestic Servants of Governors and certain Employés of Subscribing
Firms, Clubs, and Hotels, are Treated Free of Charge.*

ADDITIONAL HELP IS MUCH NEEDED.

**22,000 Sufferers have been Treated here in the last 25
Years.**

DONATIONS AND SUBSCRIPTIONS gratefully received by the
Secretary at the Hospital,

MAJOR W. CHRISTIE.

*Bankers—*PRESCOTT & CO., 50, CORNHILL, E.C.

DEFECTS OF SPEECH.

MR. WILLIAM VAN PRAAGH'S System for the Cure of *all* Defects of Speech, both ACQUIRED and CONGENITAL.

For information, apply to Mr. WILLIAM VAN PRAAGH, 11, Fitzroy Square, and 51, Warrington Crescent, London, W.

Personal interviews by appointment *only*.

TREATMENT OF INEBRIETY.

DALRYMPLE HOME, RICKMANSWORTH, HERTS.

FOR GENTLEMEN, UNDER THE ACT AND PRIVATELY.

For Particulars apply to

R. WELSH BRANTHWAITE, M.D., Medical Superintendent.

UNIVERSITY OF EDINBURGH.

FACULTY OF MEDICINE.

The Winter Session begins in October, and the Summer Session at the beginning of May.

MATERIA MEDICA..	..	..	..	..	..	PROF. THOMAS R. FRASER, M.D.
CHEMISTRY ..	..	..	..	..	..	PROF. CRUM BROWN, M.D.
SURGERY ..	..	..	..	..	..	PROF. CHENE, M.D.
PHYSIOLOGY..	..	..	..	..	..	PROF. RUTHERFORD, M.D.
MIDWIFERY ..	..	..	..	..	..	PROF. SIMPSON, M.D.
CLINICAL SURGERY	..	..	..	..	..	PROF. ANNANDALE, M.D.
CLINICAL MEDICINE	..	..	..	..	..	PROFS. SIR T. GRAINGER STEWART, FRASER, AND GREENFIELD, AND SIMPSON ON DISEASES OF WOMEN.
ANATOMY ..	..	..	..	..	..	PROF. SIR WILLIAM TURNER, M.B.
MEDICINE ..	..	..	..	..	..	PROF. SIR T. GRAINGER STEWART, M.D.
PATHOLOGY ..	..	..	..	..	..	PROF. GREENFIELD, M.D.
BOTANY ..	..	..	..	..	..	PROF. BAYLEY BALFOUR, M.D.
NATURAL HISTORY	..	..	..	..	..	PROF. EWART, M.D.
FORENSIC MEDICINE	..	..	..	..	..	PROF. SIR DOUGLAS MACLAGAN, M.D.
PHYSICS ..	..	..	..	..	..	PROF. TAIT, D.Sc.

UNIVERSITY LECTURERS.

PHYSICS ..	..	..	..	..	..	C. G. KNOTT, D.Sc.
MENTAL DISEASES	..	..	..	..	..	T. S. CLOUSTON, M.D.
DISEASES OF THE EYE..	..	..	..	..	..	G. A. BERRY, M.B.
CLINICAL INSTRUCTION	ON	DISEASES	OF	..	..	JAMES CARMICHAEL, M.D., AND JOHN PLAYFAIR, M.D.
CHILDREN ..	..	..	..	..	..	LEONARD DOBBIN, Ph.D.
CHEMICAL THEORY ..	..	..	..	..	..	W. G. SMITH, B.Sc., Ph.D.
PLANT PHYSIOLOGY ..	..	..	..	..	..	E. W. CARLIER, M.D., B.Sc.
EXPERIMENTAL PHYSIOLOGY	..	..	..	..	..	JOHN BEARD, D.Sc.
EMBRYOLOGY AND VERTEBRATE ZOOLOGY	..	..	..	..	..	DAVID HEPBURN, M.D.
REGIONAL ANATOMY ..	..	..	..	..	..	W. C. SILLAR, M.B., B.Sc.
EXPERIMENTAL PHARMACOLOGY	..	..	..	..	..	ROBERT MUIR, M.D.
PATHOLOGICAL BACTERIOLOGY	..	..	..	..	..

The annual value of the Fellowships, Scholarships, Bursaries, and Prizes in the Faculty of Medicine amounts to about £3,250. That of others tenable by Students of Medicine amounts to about £1,160. A copy of the Regulations for Graduation in Medicine and Surgery may be had on application to the Secretary of Senatus, or to the Dean of the Faculty of Medicine.

Practical Instruction is afforded in Laboratories furnished with all the necessary Appliances, and in Tutorial and Practical Classes, in connection with all the above Chairs and under the superintendence of the Professors.

University of Edinburgh, November, 1896.

JOHN KIRKPATRICK, Secretary of Senatus.

CHARING CROSS HOSPITAL MEDICAL SCHOOL.

The Livingstone Scholarship, 100 guineas, the Huxley Scholarship, 55 guineas, and six other Entrance Scholarships, total value £550, will be awarded in October.

Two Scholarships of the value of 60 guineas each are reserved for Students of Oxford, Cambridge, or London Universities.

Fees.—For the five years' curriculum of study required by the various Examining Bodies and for hospital practice, 110 guineas in one sum, or 121 guineas in five instalments.

The composition fee for sons of registered medical practitioners is 100 guineas, and the fee by instalments, 110 guineas in five payments.

The composition fee for Dental Students is 54 guineas, or 60 guineas, payable in two instalments of 30 guineas each.

A proportionate reduction of the above Fees is made to Students who have completed part of the curriculum elsewhere.

THE SCHOOL PROSPECTUS, containing full information concerning the classes, prizes, and all other arrangements connected with the Medical School, will be sent on application to the Dean, Chandos Street, Strand, W.C.

H. MONTAGUE MURRAY, *Dean.*

THE DENTAL HOSPITAL OF LONDON MEDICAL SCHOOL, LEICESTER SQUARE.

LECTURES.

Dental Anatomy and Physiology (Human and Comparative)—Charles S. Tomes, F.R.S., M.A. Oxon., M.R.C.S., L.D.S.Eng., on Tuesdays and Thursdays, at 5 p.m. (Summer).

Dental Surgery and Pathology—Storer Bennett, F.R.C.S., L.R.C.P., L.D.S., on Wednesdays and Fridays, at 8 a.m. (Summer).

Mechanical Dentistry—E. Lloyd Williams, L.R.C.P., L.S.A., M.R.C.S., L.D.S.Eng., on Wednesdays at 5 p.m. (Winter).

Metallurgy in its application to Dental Purposes—Dr. Forster Morley, M.A., F.I.C., F.C.S., on Tuesdays at 4.30 p.m. (Winter.)

The Hospital is open both morning and afternoon.

During the Sessions the Surgeons of the day will give demonstrations at stated hours.

The Medical Tutor holds classes before each Examination for the L.D.S.

The House Surgeons attend daily while the Hospital is open.

The Saunders Scholarship of £20 per annum and prizes are open for competition.

Fee for two years' Hospital Practice required by the curriculum, including Lectures, £50 in one payment, or 50 guineas in two yearly instalments. The curriculum requires two years to be passed at a General Hospital. The fee for this is about £55. Both Hospitals can be attended simultaneously.

The Calendar may be obtained on application to the Dean, who attends at the Hospital on Wednesday mornings from 10.30 till 12 throughout the year.

MORTON SMALE, *Dean.*

Private Homes and Training Schools FOR THE Backward and Mentally Deficient.

“NORMANSFIELD,”

“TREMATON,”

“CONIFERS.”

The above Homes and Schools are under the personal supervision and management of

Mrs. LANGDON-DOWN,

who has had an experience of twenty-eight years in the work.

NORMANSFIELD.—A Training Institution for the Care, Education, and Treatment of the feeble-minded of any age and either sex.

TREMATON.—A School Home for the education of Boys unsuited by reason of delayed mental or moral development for an ordinary school, but not requiring to be under certificate.

CONIFERS.—A School Home for the Education of Girls on similar lines to Trematon. A few ladies are also received needing special oversight under medical guidance but not requiring to be under certificate.

Each of these Houses stands in large Grounds of its own.

VILLAS.—Four Villa Residences provide more extensive private accommodation or a complete establishment if so desired.

The whole Estate (forty-two acres) is on gravel soil and situated twelve miles from London, close to Hampton Wick Station on the London and South Western Railway.

Medical Superintendents :

REGINALD L. LANGDON-DOWN, M.A., M.B., M.R.C.P.

PERCIVAL L. LANGDON-DOWN, M.A., M.B., B.C.

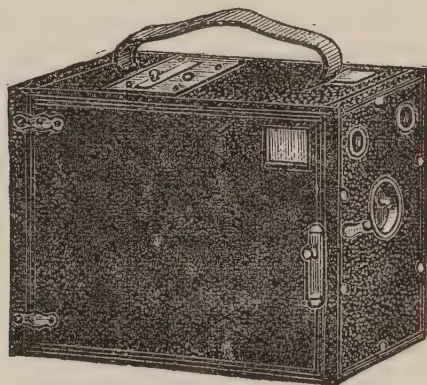
For further Particulars address—

NORMANSFIELD, HAMPTON WICK.

THE SUCCESS OF LAST SEASON!

**BARCLAY'S
50/- HAND CAMERA.**

IMPROVED UP TO DATE.



Mr. Walter Burton, Pharmaceutical Chemist, Nottingham,

Writes:—

“Please send me at your very earliest convenience another of your **50/-** Cameras same as last. I am pleased to be able to say that it is a splendid little instrument for the money, having given the greatest satisfaction to the customer to whom I sold it.”

To **BARCLAY & SONS, Limited.**

It takes **Twelve Quarter Plates**, which are brought in succession in front of the Lens by merely pressing a knob, at the same time registering the number of the exposed plate.

It has **Two View-Finders** in the usual position.

It is fitted with a thoroughly good fixed **Focus Single Landscape Lens**, having an Iris Diaphragm. By simply turning a button, time or instantaneous exposures can be made at the will of the operator.

It is **Morocco Bound**, and measures 8 by 7 by 4 inches, and weighs 3 lb.

Forwarded, Carriage Paid, anywhere in the United Kingdom, on receipt of **50/-**

BARCLAY & SONS, Limited,

95, FARRINGDON STREET, LONDON, E.C.

Face Half Title.]

THE
YEAR-BOOK OF TREATMENT
FOR 1897

THE
YEAR-BOOK OF
TREATMENT

FOR

1897

*A CRITICAL REVIEW FOR PRACTITIONERS OF
MEDICINE AND SURGERY*

Contributors

FRANCIS D. BOYD, M.D.
DUDLEY W. BUXTON, M.D.
ALBERT CARLESS, M.S.LOND.
ALFRED COOPER, F.R.C.S.
SIDNEY COUPLAND, M.D.
GEORGE P. FIELD, M.R.C.S.
ARCHIBALD E. GARROD, M.D.
M. HANDFIELD-JONES, M.D.
REGINALD HARRISON, F.R.C.S.
G. ERNEST HERMAN, M.B.
J. ERNEST LANE, F.R.C.S.
A. P. LUFF, M.D.
PATRICK MANSON, M.D.

MALCOLM MORRIS, F.R.C.S.ED.
EDMUND OWEN, F.R.C.S.
SIDNEY PHILLIPS, M.D.
HENRY POWER, F.R.C.S.
E. S. REYNOLDS, M.D.
WILLIAM ROSE, M.B.
GUSTAVE SCHORSTEIN, M.B.
STCLAIR THOMSON, M.D.
NESTOR TIRARD, M.D.
W. J. WALSHAM, F.R.C.S.
W. HALE WHITE, M.D.
E. F. WILLOUGHBY, M.D.
DAWSON WILLIAMS, M.D.

CASELL AND COMPANY, LIMITED

LONDON, PARIS & MELBOURNE

ALL RIGHTS RESERVED



WILLOW HILL INSTITUTE	
LIBRARY	
Call	wall 30 mac
Call	
No	

P R E F A C E.

THIS being the thirteenth issue of the present abstract and brief chronicle of the therapeutic work of the past twelve months, the "Year-Book of Treatment" may now be considered to have taken its place among the "hardy annuals" of medical literature. It may therefore be assumed to be so well known as to make a formal introduction to readers superfluous. There are a few changes in the staff of contributors to report. The section of Diseases of the Lungs and Respiratory Organs has been entrusted to Dr. GUSTAVE SCHORSTEIN; that on Diseases of the Kidneys and Diabetes to Dr. FRANCIS D. BOYD; that on Diseases of the Nose and Throat to Dr. STCLAIR THOMSON; that of Public Health and Hygiene to Dr. WILLOUGHBY; while Professor NESTOR TIRARD has contributed a summary of general therapeutics.

It is hoped that the present issue will fully maintain the reputation which the book has won for itself as a carefully-executed sifting of the work done in the practical departments of medicine in the course of the past year.

THE EDITOR.

January, 1897.

Best and Safest Natural Aperient.

Hunyadi János

Over 1,000 Testimonials from Medical Authorities.

THE LANCET.

"Hunyadi János."—"Baron Liebig affirms that its richness in aperient salts surpasses that of all other known waters." (1873.)

"The prototype of all bitter waters." (December 5, 1896.)

BRITISH MEDICAL JOURNAL.

"Hunyadi János has established itself in favour with leading physicians and therapeutists of every country, whose testimonies bear witness to its action as a speedy, sure, and gentle aperient for ordinary use; it is remarkably and exceptionally uniform in its composition." (August 30, 1884.)

"Hunyadi János sprang rapidly into great and widespread reputation owing to its speedy, sure, and gentle action. It apparently continues to hold the ground which it so quickly and effectually secured." (August 23, 1890.)

Annual Sale exceeds 6,000,000 Bottles.

HUNYADI JÁNOS

25 Years' Success in the United Kingdom.

THE PRACTITIONER.

"This product of nature's pharmacy has for many years held a place in the very front rank of natural saline waters."

"We have found that in the treatment of constipation, from whatever cause arising, Hunyadi János fulfils the requirements of an efficient remedy, in that it acts *cito, tuto et jucunde*." (May, 1896.)

MEDICAL PRESS AND CIRCULAR.

"Hunyadi János is certainly the best known, and, in our experience, the most trustworthy of the Hungarian laxative mineral waters. Taken in the morning, either pure or diluted with hot or cold water, it produces a copious evacuation without leaving behind it any intestinal discomfort or exhaustion." (February 5, 1896.)

CAUTION.—Every Bottle bears the Signature of the Proprietor,

Andreas Saxlehner.

CONTENTS.

	PAGE
DISEASES OF THE HEART AND CIRCULATION. BY SIDNEY COUPLAND, M.D., F.R.C.P.	1
DISEASES OF THE LUNGS AND ORGANS OF RESPIRATION. BY GUSTAVE SCHORSTEIN, M.A., M.B. OXON., M.R.C.P., D.P.H. . . .	27
THE TREATMENT OF NERVOUS AND MENTAL DISEASES. BY ERNEST S. REYNOLDS, M.D. LOND., F.R.C.P.	61
DISEASES OF THE STOMACH, INTESTINES, AND LIVER. BY W. HALE WHITE, M.D. LOND., F.R.C.P.	80
DISEASES OF THE KIDNEYS, DIABETES, ETC. BY FRANCIS D. BOYD, M.D., F.R.C.P. EDIN.	97
GOUT, RHEUMATISM, AND RHEUMATOID ARTHRITIS. BY ARCHIBALD E. GARROD, M.A., M.D., F.R.C.P.	124
INFECTIOUS FEVERS. BY SIDNEY PHILLIPS, M.D. LOND., F.R.C.P. .	136
MEDICAL DISEASES OF CHILDREN. BY DAWSON WILLIAMS, M.D. LOND., F.R.C.P.	149
ANÆSTHETICS. BY DUDLEY W. BUXTON, M.D., B.S., M.R.C.P. . .	164
GENERAL SURGERY. BY WILLIAM ROSE, M.B., B.S., F.R.C.S., AND ALBERT CARLESS, M.S. LOND.	174
ORTHOPÆDIC SURGERY. BY W. J. WALSHAM, F.R.C.S.	225

	PAGE
SURGICAL DISEASES OF CHILDREN. BY EDMUND OWEN, M.B., F.R.C.S.	236
DISEASES OF THE GENITO-URINARY SYSTEM. BY REGINALD HARRISON, F.R.C.S.	253
DISEASES OF THE RECTUM. BY ALFRED COOPER, F.R.C.S. . . .	263
VENEREAL DISEASES. BY J. ERNEST LANE, F.R.C.S.	270
THE DISEASES OF WOMEN. BY G. ERNEST HERMAN, M.B. LOND., F.R.C.P.	281
MIDWIFERY. BY M. HANDFIELD-JONES, M.D. LOND.	317
DISEASES OF THE SKIN. BY MALCOLM MORRIS, F.R.C.S.ED. . . .	357
DISEASES OF THE EYE. BY HENRY POWER, M.B., F.R.C.S. . . .	374
DISEASES OF THE EAR. BY GEORGE P. FIELD, M.R.C.S.	393
DISEASES OF THE NOSE AND THROAT. BY STCLAIR THOMSON, M.D., M.R.C.P., F.R.C.S.	405
TROPICAL DISEASES. BY PATRICK MANSON, M.D., F.R.C.P. . . .	423
PUBLIC HEALTH AND HYGIENE. BY EDWARD FRANCIS WILLOUGHBY, M.D. LOND., D.P.H.	431
MEDICAL JURISPRUDENCE. BY ARTHUR P. LUFF, M.D., B.Sc. LOND., F.R.C.P.	438
SUMMARY OF THE THERAPEUTICS OF THE YEAR 1895-96, CHIEFLY IN REFERENCE TO NEW REMEDIES. BY NESTOR TIRARD, M.D. LOND., F.R.C.P.	445
INDEX TO AUTHORS QUOTED	466
INDEX TO SUBJECTS	470

THE
YEAR-BOOK OF TREATMENT
FOR 1897.

DISEASES OF THE HEART AND
CIRCULATION.

BY SIDNEY COUPLAND, M.D., F.R.C.P.,

Physician to the Middlesex Hospital.

IN the domain of cardiac therapeutics attention is still being largely directed to the merits of the systematic employment of saline and effervescent baths, with regulated muscular exercises, which have been carried out for several years at Nauheim. The interest taken in this subject was illustrated at the annual meeting of the British Medical Association at Carlisle, where a debate upon the treatment of cardiac failure was opened by Sir T. Grainger Stewart; for although the opener by no means restricted himself to balneological and mechanical treatment, these topics alone were mainly dealt with by succeeding speakers. In addition to the experiences related on this occasion there have appeared several papers on the subject by physicians who have personally studied the treatment, including the report of a Special Commission of the *Lancet*, whilst the Nauheim method has even received the doubtful honour of notice in the lay press. Beyond this absorbing topic comparatively little has been added to the stock of knowledge; but the publication (now nearly complete) of Penzoldt's and Stintzing's "*Handbuch der speciellen Therapie innerer Krankheiten*" (Jena: G. Fischer) has afforded opportunity for a summary review of present-day therapeutics of the heart and blood-vessels by J. Bauer and Ch. Bäumler.

VALVULAR HEART DISEASE.

I. The treatment of acute endocarditis.

In the last issue of the "Year-Book" reference was made to the results obtained by Caton in the active treatment of acute

endocarditis. Since then he has published (*Brit. Med. Journ.*, January 25, 1896) a paper in which he contrasts his experience of this complication of acute rheumatism during a period of four years prior to his employment of these measures, and during the ten years in which he has practised them. The method consists mainly in continuous counter-irritation combined with prolonged rest, and it may best be given in his own words:—"I examine the heart daily in each case of acute rheumatism. If a bruit occurs at the mitral or aortic valve, or even when the premonitory *assourdissement* is perceptible, a series of small blisters, each the size of a florin, is applied along the course of the third, fourth, fifth, or sixth intercostal nerve, in front and at the sides. We apply one at a time, repeating it at different points. These small vesications occasion no serious amount of pain or inconvenience. I have rarely had a complaint about them. Meantime, sodium or potassium iodide is given in 8- or 10-grain doses thrice daily, the ordinary treatment of rheumatism being also continued. Lastly, I keep the patient in hospital for, on the average, forty-one days, most of the time in bed. The results have exceeded my utmost hopes. As I have said, during the ten years I have adopted this method 40 cases of acute endocarditis have occurred in my wards. In 7 of these the patient went out with a distinct and, I fear, permanent bruit; in 3 the result was doubtful, but, I fear, unfavourable; in 29 the bruit had disappeared, and the patient went out with a perfectly normal heart. Many of these cases were kept in view for months or years afterwards. . . . The contrast between the results of the previous expectant treatment and that of the more active measure of long-repeated vesication, with administration of iodide and prolonged rest, is a striking one. Under the former, 12 out of 13 recovered with a damaged heart, while under the latter nearly three-fourths regained a normal circulation."

[Caton is certainly to be congratulated on these results, which he has done well not to adduce until after an experience sufficiently long to avoid any fallacy. For although not every murmur in acute rheumatism means endocarditis, and although, moreover, it is difficult to trace the subsequent course of the majority of hospital patients who have been under treatment for endocarditis, it must be freely admitted that the disappearance of bruits in so large a proportion is an almost unique experience in hospital records.]

2. Treatment of aortic valvular disease.

Alex. Morison points out (*Brit. Med. Journ.*, March 14, 1896) that the aspirative force of the respiratory movements upon the heart and blood-vessels has hardly been sufficiently recognised,

and that its recognition is of importance in the selection of remedies for the relief of the effects of aortic valvular disease. The effect of inspiration is to attract the blood towards the heart from the great vessels, venous and arterial, and of expiration to drive the blood from the heart into the vascular system. He shows that the chief dilating force acting on the left ventricle in aortic incompetence is not the pressure of the blood-column, but the active aspirative force of the ventricle, together with the increasing difficulty experienced in propelling the blood in the arterial system. Orthopnoea, then, is not so much due to deficient oxygenation, but is the position assumed for greater comfort induced by the exaggerated respiratory movements which are thus capable of performance. The unsuitability and even the risk of administering digitalis in aortic incompetency is to be ascribed to the fact that digitalis acts continuously, increasing the tonicity of the heart muscle, and aiding systolic contraction by controlling dilatation. This involves increased aspirative power of the ventricle, and therefore on this ground he believes that digitalis "aids the circulation . . . not so much by strengthening systole as by increasing the aspirative power of cardiac diastole and vascular elasticity generally." Now, in aortic incompetency it is not of advantage that the ventricular aspirative force should be increased, although, as in all forms of valvular disease, it is of service to increase this power of the systemic arteries. Hence digitalis must be cautiously given, if at all, and is decidedly contra-indicated where the arteries are incapable of being thus influenced owing to sclerosis. "That degree of persistent tonicity which will safely reduce the cavity of the ventricle must . . . increase also the aspirative power, and if pushed to such a degree as relatively to diminish this power, must at the same time, by excess of tonicity, lessen the aspirative power of the systemic arterial system." Moreover, he shows, contrary to the opinion of some, that retardation does increase the facility of regurgitation. Digitalis is less objectionable in aortic obstruction, since the influence of ventricular aspiration on the aortic blood-stream is checked by more or less perfect valves, while the increased tone of the arterial system promotes resiliency and aspirative power. The indication in aortic regurgitation is rather to accelerate the action of the heart in order to maintain the pressure in the aorta, and therefore such drugs as belladonna, strychnine, and the nitrites are preferable to digitalis. *Per contra*, in mitral disease, where it is necessary to increase the aspiratory power of the ventricle, the retardation produced by digitalis supplies the need required by nature.

CARDIAC FAILURE.

3. Baths and exercises in the treatment of heart failure.

At the annual meeting of the British Medical Association Sir T. Grainger Stewart (*Brit. Med. Journ.*, September 19, 1896) opened a discussion on the "Treatment of Cardiac Failure."—Under this term he included all conditions in which the muscular fibre of heart becomes unfit adequately to carry on circulation, and said that the question was how we can best improve tone of muscle, action of nervous mechanism, or establish compensation for valve defects. He laid stress on the great importance of *rest*, the removal of the burden of extra work : of most service in the case of labouring men. Next the element of *hope*. Then *diet*. Some benefit by increased food, others by diminution ; many by alteration of quality. Many take too much liquid, especially with or soon after meals. We also have to combat tendency to obesity. Many improve at once on dry diet. Alcohol in excess is bad, or if it cause dyspepsia. Alcohol in moderate doses is of great service in cardiac debility, as after influenza or other acute disease, as well as in advancing life. Whisky from 2 drachms to 2 ounces, once, twice, or thrice daily, but total not exceeding 4 ounces, always with food. The effects of tea, coffee, and cocoa should be watched ; tobacco is better discontinued. *Exercises*, in three different forms :—(1) Passive exercise and massage ; (2) movements with regulated resistance (Schott) ; (3) more active movements, as hill climbing (Oertel). Effects judged :— (a) By percussion of cardiac area before and after, as well as ultimately ; (b) by character of sounds ; (c) by rate and character of pulse ; (d) by subjective sensations.

1. *Passive exercises.*

As originally practised in Sweden by Ling. Movements of arms, kneading and rolling movements of foot, kneading of calf and thigh with flexion of knees and rotation of hips ; then hands and arms ; massage of abdomen, tapping, etc. of precordial region ; then manipulation of spine. Then repeat movements of arms to expand thorax. Results in cardiac dilatation are perceptibly to diminish area of dulness, improve sounds and pulse ; the patients feel better. In one or two failure, because heart weak or patient fatigued. Favourable effects may not pass off completely. Repeated applications produce permanent diminution of area of dulness with improvement of pulse and of patient's sensations. A case in which Schott's movements caused irregularity was next day much benefited by passive movements. The explanation is that circulation of lymph is improved and more blood brought into muscles,

this relieving the overloaded heart; probably also the heart is improved through action of the exercise on nervous system.

2. *Movements with limited resistance* (Schott).

A modification of the Swedish system. In large proportion immediate improvement in condition of heart, sounds becoming more distinct, area of dulness diminishing. In many rhythm of pulse improves, and beat more vigorous. Heart rarely goes back and improvement lasts. He mentioned a case of cardiac failure, anasarca, ascites, hydrothorax; exercises for twenty minutes, after which apex had moved inwards $\frac{3}{4}$ inch and dulness had contracted all round. The patient made an excellent recovery, apex later coming to nipple line; had no medicine. He saw others equally remarkable, and gave the notes of some, remarking that the results are more distinct than those from passive exercises. The movements are so conducted that the heart's action is kept short of increased demand and the work facilitated. Best suited for cases where some power of heart remains.

3. *Method of climbing* (Oertel).

Not so widely applicable, more power required, and therefore used after the Nauheim treatment; it has the advantage of being taken in open air.

Baths. He described the Nauheim baths, saline and "Sprudel." May be imitated by adding to a 40-gallon bath 5 lbs. of NaCl and 8 ounces of CaCl_2 , whilst addition of Sadow's powders produces effervescence. The skin is reddened, pulse slow, and becomes regular probably from diminished peripheral resistance; greater influx of venous blood and heart's action more vigorous. The action on skin also stimulates nerves of vessels and heart. Usually baths and exercises are combined; they cannot replace the former treatment by rest, diet, and medicine, but they form a very valuable addition to our resources, and enable medicines to be dispensed with where these are not well borne.

The baths should be tried in all cases, but where there is grave debility only passive exercises are admissible. When the heart is more vigorous, then the Schott exercises should be practised, varied according to the condition of the patient; and when the cardiac tone was sufficiently restored, Oertel's method should be adopted. It was not necessary in many cases for the patient to go to Nauheim, as the same treatment could be carried out in England.

Sir T. G. Stewart referred also to the use and value of cardiac tonics, expressing his preference for digitalis, and speaking highly of strychnine, and further described the treatment of the results of cardiac failure.

In the course of the discussion that ensued several speakers referred to the moot point as to the significance of the shrinking of the area of cardiac dulness observed after this treatment, to which reference is made below. **Saundby** said there was much divergence of opinion as to the effects of the Nauheim baths and exercises on pulse tension, and his own cases did not warrant him in expressing a decided view of the value of the method ; but it was based on rational principles, and he should continue it. **Byrom Bramwell** considered that rest and cardiac tonics were the best means of combating heart failure, and protested against the indiscriminate way in which the Schott method was practised. **Alex. Morison** said that the baths and exercises required close supervision, as they might do harm if unskilfully employed, and he thought they might usefully be combined with other treatment. **Bezly Thorne** agreed as to the value of rest in acute cases and where there was great exhaustion ; and that massage combined with rest often restored a dilated heart. The Oertel system was suitable in the later stages, whilst the Schott method secured the advantages of exercise without danger, and in many cases enabled the heart to respond to drugs. He doubted the necessity of a dry diet, remarking that warm water taken at the end of gastric digestion is so rapidly excreted as not to impede the heart's action, but rather to assist it. **Th. Fisher** considered that the promotion of metabolism by exercises and baths restored the nutrition of the heart which had been impaired by toxic products.

Leith in an elaborate study (*Lancet*, March 21 and 28, 1896) enters minutely into the *modus operandi* of the system of baths and exercises as carried on at Nauheim, and thinks that the physiological explanations advanced are inadequate. He summarises the effects produced as follows :—

(1) *Subjective* :—(a) Sense of cold followed by warmth ; (b) sense of oppression in these which passes off ; (c) increased power of sleep ; (d) disappearance of unpleasant sensations ; increased sense of well-being.

(2) *Objective* :—(a) Increase in strength and fall in rate of pulse ; (b) slight slowing of respiration ; (c) diminution in size of heart, the dulness shrinking $\frac{1}{2}$ to $\frac{3}{4}$ or even 1 inch in all directions.

The cases in which the treatment has been applied comprise :—

I.—*Cases of functional disease* :—(1) Post-influenzal ; (2) overstrain ; (3) neurotic ; (4) anæmia, etc. General condition improved ; pulse rate on average fell 6 or 7 beats ; area of c. d. reduced $\frac{5}{8}$ to $\frac{3}{4}$ inch ; reduction generally greatest on right side.

II.—*Cases of organic disease* :—(1) Valvular lesions, in one

case of ten years' standing; some fair examples of loss of compensation; average diminution of pulse 8 beats; reduction of c. d. $\frac{1}{2}$ to $\frac{5}{8}$ inch at 4th cart.; left side most; generally improved in health. (2) Congenital heart disease.

III.—*Cases of simple angina pectoris and Graves's disease.* No data.

General experience favourable; patients undoubtedly feel better; difficulties in defining cardiac area by percussion; on cadaver it is accurate; during life the movements of lungs materially interfere; difficult to get precisely same conditions at each percussion; Heitler points this out. Difficulties greater in dilated heart. The baths produce increased lung expansion; but lower limit of lungs does not descend, perhaps because of pressure of water on abdomen (Poore). Expansion of lung may also affect apex beat, which is displaced upwards and inwards. On all grounds cannot admit that diminution of dulness corresponds to decrease in size of heart. Probably some takes place, but not of daily occurrence. However, sounds become louder and clearer; functional systolic murmur may disappear or presystolic appear.

Effect on pulse:—

(1) Rest; distinct effect. (2) Temperature, of 95° to 86° ; air baths between 90° and 95° , no effect. (3) Simple thermal bath at temperature of 90° ; pulse fell 5 to 7 with increase of strength. (4) Saline bath, addition of NaCl, 1 to 3 lbs. to 10 gallons, increased change in pulse and more agreeable. (5) Carbonic acid; addition of Sandow's tablets, decided action, further diminution in rate and increase of strength; almost as pronounced when added to a simple non-saline bath; enables lower temperatures to be borne. Effect of temperature, slight tendency to dilatation of cutaneous vessels, and contraction of those of head, with slight stimulation of cardio-inhibitory centre; the saline element apparently no direct influence on vascular system; some nervous stimulation possible but not marked. The nascent carbonic acid may act by stimulating nerves, causing dilatation of cutaneous vessels; hence sense of warmth. Some CO_2 may be absorbed by breath. On heart very little direct effect, and such as there is due to temperature and to CO_2 , but little to salines. Respiration is slower and deeper. The baths may not do much, but compression of abdomen may facilitate return of blood to heart; on blood very trifling effect.

The system acts mainly by regularly repeated alterations in blood pressure, of the distribution of blood, of osmotic actions, and of the various external and internal secretions. Metabolism stimulated and heart shares, but no direct influence either by

nervous channels or by greatly lessening peripheral resistance. Indeed, there is every reason to believe that although the cutaneous vessels are somewhat dilated, the general sum of arterial pressure, and hence peripheral resistance, is increased. And cardiac contractions are increased by resistance. There is also the mental effect of faith in the remedy.

The exercises are inferior to baths in range of applicability and in efficacy; they are well suited to bring out action of all muscles in trunk and limbs in turn. When not excessive they cause dilatation of blood-vessels in muscles, increased tissue metabolism, and more rapid elimination of effete materials, thus bringing about better nutrition; and they must press on veins and favour return of blood to heart. The hypothesis of Schott that there is afferent impulse to cardio-inhibitory centre by motor nerves is not needed. Both gentle and vigorous muscular action must hasten circulation and favour return of venous blood. Increased endocardial stimulation follows, and naturally leads to increased blood pressure. Possibly, the intramuscular vascular dilatation is not compensated for by contraction elsewhere, and is greater in amount than the increase due to quickened venous flow; this is supported by L. Brunton's observations; in which case there would be actual lessening of peripheral resistance and a diminution of pressure, but the slower and stronger pulse is opposed to this. The application of the "system" is wider than any drug, but cannot be applied to all classes of cardiac derangements. Evil habits of nutrition of long duration cannot be remedied in a few weeks. Capable of doing much good, it is also capable of harm. It is at once too wide and too restricted; why not use lower temperature than 86°, and other modes of gymnastic exercise?

Rives (*New York Med. Journ.*, April 11, 1896) gives a full description of Nauheim, its springs and baths, remarking that so long ago as 1835 they were employed for the treatment of rheumatism, and subsequently gained some repute for locomotor ataxy. Prof. Beneke, of Marburg, who was physician to the Nauheim baths from 1857 to 1886, was the first to show that patients suffering from rheumatic cardiac affections derived benefit from the baths, and he wrote several articles upon them, the chief of which was published in 1872. A. Schott's first paper on the treatment of heart disease was published in 1880, and later he was joined by his brother, Th. Schott, who remains to carry on the treatment which they inaugurated. They introduced the combination of the bath treatment with that of "resisted exercises," adapted

from the system introduced by Ling, of Stockholm. In the article referred to Rives describes the employment of the baths and exercises with which we have been familiarised in Great Britain by the writings of Bezly Thorne and many others; and he remarks that the application of the system has been considerably extended by the substitution of artificial baths for the natural waters of Nauheim. In America, Babcock of Chicago gave his experiences of this treatment two years ago. Quoting the dictum of T. Schott that "unsystematic exercises constitute a heart-weakening, systematic exercises, on the contrary, a heart-strengthening treatment," Rives relates some cases illustrative of the benefits following the Nauheim methods. One of these may be particularly mentioned. A man, aged fifty-three, had been subject to anginal attacks for two years and a half, for which nitrite of amyl and nitro-glycerine had been administered. T. Schott considered the case one of incipient fatty degeneration with dilatation. The patient was treated by baths at Nauheim during the months of June and July. "Beginning with a thermal bath of 32.5° C. (90.5° F.) temperature and eight minutes' duration, these were continued until fourteen had been taken, the duration gradually prolonged up to seventeen minutes and the temperature reduced 1° C. Beginning with the sixth bath, one litre of 'Mutterlange' was added, which was increased up to three litres. On June 19 Sprudel baths were begun of at first eight minutes' duration, which were finally prolonged to twenty minutes, and the temperature reduced as low as 28° C. (82.4° F.). From the 23rd of July, for the remainder of the course, the Sprudelstrombad No. 7 (temperature 88.8° F.) was taken at first for eight minutes, afterwards for gradually lengthened periods. Every fourth or fifth day during the course, or occasionally the third day, the bath was omitted. In all more than forty baths were taken. The patient commenced to take the exercises about two weeks after beginning the baths, and also used one of the drinking springs for its effect upon the liver." After a week's treatment he was able to leave off nitro-glycerine, and he left on August 8 "in excellent condition . . . greatly impressed by his personal experience of both baths and exercises." In his remarks upon the results of the treatment Rives says that although obviously it cannot restore damaged valves, yet there are several cases of valvular disease which have been remarkably benefited by it—cases, too, where digitalis has failed to restore compensation. "It is well known that in aortic regurgitation digitalis is not always

beneficial. Good results are secured at Nauheim, however strange it may at first appear, in lack of compensation both from aortic and mitral disease, as well as in cases of combined disease of both valves, and in many instances of patent foramen ovale." Excellent results are obtained from myocardial weakness arising from anæmia, acute disease, influenza, as well as from overstrain. It is palliative in chronic degenerative conditions, where the result is more uncertain and the treatment often prolonged; but even apparently hopeless cases and angina pectoris have derived benefit. "The contraindications to the Nauheim treatment are advanced arteriosclerosis and aortic aneurysm. Patients with the latter affection have used the baths with some alleviation of symptoms, but on account of the danger of raising the blood-pressure these must be employed with the greatest caution. Many very serious cases of heart disease come to Nauheim, and, as is only to be expected, some deaths occasionally take place during the season; but such is the care taken by the local physicians, who write their orders with exact directions, that fatal accidents directly attributable to the baths are practically unknown."

Heineman, of New York, who has studied the Nauheim treatment for the past eight years, gives his experiences in an interesting paper communicated to the *Verein für innere Medicin* at Berlin in February, 1896 (*Deutsche. med. Woch.*, August 13, 1896). He first describes the mode of production of the artificial saline and effervescent baths, giving the rules to be adopted in their employment. He says that there is no need for the dietetic restrictions recommended by Oertel, although a lessened quantity of fluid at meals is useful so as to avoid over-distension of the stomach; and a restriction of fat-forming foods in the case of the obese. The system of resisted gymnastics, which he considers as the great advance made by the brothers Schott upon the practice of Beneke, is briefly described, especially as to the rules which should govern its employment. Although in some cases the use of baths alone, or of exercises alone, will do all that is required, the combination of the two gives the best results. The treatment may be commenced with the baths, and the exercises begun a week later. General tonics may be prescribed after the course is completed. Should a relapse occur when under the treatment, this must be suspended for a time and drugs given; the resumption of the baths being guided by the patient's state, and then cautiously undertaken, as to their duration, etc. Similarly,

if relapse occur when undergoing the exercises, these must be suspended, and it may be well to precede their resumption by some baths, as well as by drug treatment. The physiological effect of the saline bath is, he says, to promote metabolism, and principally to stimulate the cutaneous nerve-endings, and thus act reflexly upon the heart and other organs. Subjectively, the sense of oppression at first experienced on immersion gives way to one of warmth and comfort in the saline and carbonic acid baths: whilst, objectively, the skin reddens, the pulse becomes fuller, often slower, and its tension rises. After a time the tension lessens, and the pulse becomes softer. Frequently only a slight change is appreciable in the heart itself after a bath, but its action becomes steadier and stronger. But, if there are no countervailing circumstances, so that the baths exert their full effect, then, whether it be the saline bath, or the carbonic acid bath, there is at first a diminution of the area of cardiac dulness. The diminution in the transverse diameter generally precedes that in the vertical, and in order to eliminate the fallacy of apparent diminution from lung expansion, it is essential to note both the absolute and the relative dulness, the lower limits of the lungs and the girth of the chest before and after the bath. He is convinced that the heart does gradually decrease in size, even although this does not occur after every bath. But the change may not be permanent, for from one day to another the heart often regains its former volume. Should a relapse occur—as not seldom happens—then the diminution quite disappears; yet in such cases the heart will regain itself very rapidly, and recovery be assured. In a few days diuresis and diaphoresis are marked, with disappearance of œdema, dyspnœa, etc.; and the patient feels better after every bath. Sleep is often disturbed during the period, whilst the rheumatic and gouty may experience slight attacks during the course. As regards the effect of the exercises, Heineman says that their use for half-an-hour or less causes the pulse to become stronger, fuller, and mostly slower. Sometimes in cases of mitral stenosis, and also in aortic insufficiency, there has been a fall in tension, and a diminution of volume, which he attributed to a transient dilatation of heart. Apart from this, a diminution of the size of the heart can generally be made out after the exercises. An explanation of the action of these gymnastics is difficult; partly it is due to arterial dilatation relieving the heart, partly, perhaps, to reflex action on the heart increasing its contraction. He gives his experience of seventy-seven cases

he had observed, and states the *indications* for the treatment to be as follows:—All disorders of circulation, all kinds of heart disease, with or without valve defects, especially with disturbance of compensation; angina pectoris (to be first treated by baths); Graves's disease, hæmophilia, and Barlow's disease; and the "so-called puberty—or adolescence—disease," with or without mitral murmur. The usual complications, as œdema, anasarca, hydrothorax, hydropericardium, form no contra-indication. And the *contra-indications* are arterial sclerosis in advanced stages, heart disease if many complications are present, as pulmonary infarction, etc.; marked weakness, aneurysm of aorta of the second or third degree; acute and chronic nephritis. He concludes his paper with notes of cases treated in the Charité Hospital at Berlin.

The Nauheim Baths and the treatment carried on there formed the subject of an inquiry by a *Lancet* Commission (August 29, 1896), which reported in a judicial and temperate manner upon the question. It is stated in that report that the effect of the baths is to diminish the pulse rate and strengthen the force of the heart up to a certain point, after which continued immersion is apt to cause enfeeblement and irregularity of action. It is admitted to be difficult to determine noticeable contraction of the heart area during the treatment, but, just as after the use of other remedies, such a change can be noted afterwards. The general effect of the gymnastic exercises is to enlarge the radial pulse wave, increase the force of the cardiac contraction, to bring the apex beat nearer to the middle line of the body; but difficulty was again experienced in observing any great shrinkage, nor is that desirable. The most suitable cases are those of enfeebled heart, with or without marked dilatation, and with or without organic valvular lesion.

Leslie Thorne Thorne (*Lancet*, January 4, 1896) has carried out this treatment at Llangamarch Wells, 600 feet above sea-level, sheltered from the east by a range of hills. Of 26 cases, all but two did well, these being one of calcareous degeneration, the other a malarial subject. Treatment was begun by baths of the "Barium Well," to which was afterwards added sodium chloride, then calcium chloride, and later Sandow's effervescing tablets. There are two theories of the *rationale* of the system:—(1) Schott: baths and exercises act on heart reflexly through the nervous system, stimulating the cardio-inhibitory nerves, slowing and strengthening the pulse; and (2) Broadbent, Bezly Thorne and others: that they cause dilatation of muscular and cutaneous

vessels, and relieve the heart from backward pressure. Saundby maintains that they slow the heart and raise blood pressure, and his tracings do show this as to exercises, but as to baths those taken before and after show very little difference. Leslie Thorne finds that as a rule the pulse is reduced in frequency and decreased in tension, and this should be aimed at. Tracings are given which show this. "These indications lead me to believe that the effects of the baths, and exercises upon the circulatory system, are principally mechanical, the baths acting more directly on the vessels of the skin, and the exercises on the vessels of the muscles, causing both these sets of vessels to dilate. In this way the heart has less pressure to work against, so that it is enabled to work more slowly and more efficiently, the greater calibre of the vessels causing the arterial tension to be lowered. The heart's action being less rapid and rendered more powerful, probably raises the arterial tension again, but not to the extent it exhibited before the bath or exercise was commenced." Four cases are given, with pulse tracings, and outlines of cardiac dulness. He has found the treatment answer where drugs had failed. There is no need for patients to go to Nauheim.

The Schott treatment was discussed at the Harveian Society (*Lancet*, March 28, 1896, and *Brit. Med. Journ.*, April 4, 1896), the subject being introduced in a paper by **Bowles**, who had been surprised at the remarkable results he had seen at Nauheim. It was important that improvement should be gradual, and at first the baths may give rise to a discouraging sense of weakness. The progress towards recovery was indicated by the disappearance of œdema, dyspnœa, and changes in the heart.

In the discussion, **Bezly Thorne** mentioned a case of failure where aneurysm was present. He thought a system which led to repair of atheroma and other degenerations worthy of trial even when aneurysm was present, and prolonged treatment not required for old cases and Graves's disease. **Wethered** distinguished between "cure" and "relief": the success was largely due to strict *régime*, and if patients would submit there is no reason why it should not be carried out in England. The most successful were dilatation without valve disease and neurotic cases. **Alex. Morison** was satisfied of benefit: it was due to carbonic acid, with the mental stimulus. He criticised the apparent heart shrinkage, and said Stokes of Dublin was the pioneer of this method. **Jno. Broadbent** thought Nauheim life an important factor. The Schott treatment was of no use in old valvular disease where drugs had failed. He had known syncope in the bath in two cases

of aortic regurgitation. Mitral disease (especially stenosis) with difficulty of compensation would benefit. Also heart weakness from influenza and over-strain. **Leslie Thorne Thorne** had treated cases at Llangamarch Wells and in London, with similar results as at Nauheim. Many cases of valve disease were benefited, as shown by disappearance of œdema, albuminuria, dyspnœa, etc. **Heineman** gave as contra-indications arterio-sclerosis in advanced stage, aneurysm, acute Bright's disease and chronic. Where there was great feebleness, care was required.

"Self-Poisoning in Heart Disease: its Relation to the Schott Methods of Treatment," is the title of a paper by **Bezly Thorne** (*Lancet*, March 21, 1896). In 90 per cent. of cases of heart disease there were collateral symptoms of blood contamination, attributed to defective digestion, especially intestinal, causing excess of gastro-intestinal fermentation, formation and absorption of toxic products, arterial contraction, increased peripheral resistance, impaired cardiac nutrition, venous congestion, arterial depletion, etc. Hence might ensue arterial degeneration and atheroma—Savill's "arterial hypermyotrophy."

Aim at relief and prevention of catarrhal conditions, correction of bacterial fermentation, avoidance of fermentable articles of diet, intestinal antiseptics, adequate elimination, opening up of arterial channels, repair of cardiac and vascular structures. Bismuth, especially salicylate, mercury, as grey powder, calomel, bichloride or biniodide, guaiacol, resorcin, thiocamf, are useful. In long-standing cases of desquamative catarrh there is always a weak, dilated heart; salines are most used in gastro-duodenal cases, but are often curative in colic cases, especially from natural springs, having powerful influence on kidneys. Avoid carbohydrates and hydrocarbons in diet, but warm water may be taken with advantage. These measures will purify the blood and relieve arterial tension; but Schott treatment first and foremost. The essence of the exercises is "that the efforts of the individual should be so regulated and timed as to produce no fatigue or sense of distress depending on inco-ordination of breathing and circulation," and should never overtax the patient's power of reaction. That will not be if the pulse rate be increased, or its volume diminished. The force of myocardial contractions is increased, the arterial capacity expands, tension is reduced, volume and force of pulse rise, and frequency diminishes. There is a glow of warmth, capillary circulation is quickened, healthy stimulus to metabolism, and relief to congested viscera. Kidneys again act, diuresis and digestion improve, and skin again perspires. No drug treatment does so much.

4. The rationale of the Nauheim treatment.

Various explanations have been given of the manner in which the systematic use of baths and exercises operates to relieve the work of an enfeebled heart, and to improve its tone. Some of these have already been mentioned in the abstracts of papers upon the Schott treatment, in the preceding pages, and in the "Year-Book" for 1896. In the Carlisle debate, H. Campbell pointed out that in resisted movements the entire muscular system is in a state of tonic contraction, stimulating the heart, dilating the muscular arterioles, and diminishing the venous afflux. The increase in the capacity of the lungs facilitates the emptying of the right heart. The bath has a similar action, causing widespread involuntary contraction and increase of the pulmonary capacity. The ingredients of the bath have no specific effect (herein he differs from most observers, who ascribe much to the stimulation of the skin by the saline and effervescent bath). The peripheral resistance is raised by widespread tonic contractions retarding the venous flow; hence the slowing of pulse. The same physician expresses his views on this subject in the *Lancet* (April 4, 1896, p. 951). P. Watson Williams in his remarks at Carlisle first cited the sequence of events in heart failure as given by Starling, as follows:—(1) Heart-pump failure; fall of arterial pressure; rise of pressure in venous trunk near heart; fall of capillary pressure in periphery, kidney, intestines; absorption of fluid by vessels from intestines and peripheral tissues; (2) continued absorptions from alimentary canal, with diminished excretions from kidneys, and production of hydræmic plethora, with rise of mean systemic pressure, leading to (3) rise of capillary pressure in dependent parts followed by dropsy; (4) continued hydræmic plethora leads to ever-increasing overfilling of heart cavities, and ultimate failure of already incompetent heart. Effect of muscular contraction is (a) to empty lymph spaces, and cause transudation from capillaries, diminishing capillary hydræmic plethora; (b) increase amount of blood supplied to muscles and limbs. Thus peripheral resistance lowered, but ventricle, enabled to empty itself, acts with increased vigour, and peripheral resistance again rises, so that the pulse, while fuller and stronger, is less frequent. Ling's exercises (adopted at Nauheim) entail regular, deep, slow respiration, which aids the right ventricle to empty itself, instead of preventing it, as would be the case if the breath were held.

5. The effect of the Schott treatment on the size of the heart.

An interesting question was raised by Vivian Poore (*Brit. Med.*

Journ., November 9, 1895) as to whether the alleged diminution of the area of cardiac dulness recorded by observers as one of the most striking effects of the treatment of dilatation of the heart by baths and exercises, might not be due rather to increased pulmonary expansion, since the amount of change recorded would be inconceivable if it entirely applied to shrinking of the organ. Bezly Thorne (*ibid.*, December 14, 1895) wrote that the remarkable shrinkage of dulness had been attested by many observers, although the actual diminution in the size of the heart might not be correspondingly great. It was "beyond cavil" that sufferers for months and years had been restored to health. He did not say that the lungs do not expand, but that the shifting of the apex beat cannot be the result of such expansion, since its force is increased and not diminished. Nor is it depressed, but often rises obliquely in the direction of the sternum. The lungs probably expand passively to fill the vacuum left by the shrinking heart, and the deeper inspirations would assist the heart in expelling its contents. In a later communication the same writer (*ibid.*, March 14, 1896) deals with the greater precision in defining the heart limits by the adoption of the method of auscultatory percussion. In this he says:—"Speaking generally, the more or less irregular convexity of the upper half, or two-thirds of the cardiac area of dulness, may be said to present itself under three differing typical forms, which are indicative of as many several conditions in relation to dilatation. The transition from the one to the other under the influence of the physical treatment is in most cases so rapid that intermediate phases cannot always be observed. The typical forms alluded to may be described as the oval, the bipartite, and the conoid. As the area of dulness undergoes diminution, the oval merges into the bipartite, and the bipartite into the conoid. As the area becomes progressively smaller, and stage by stage the apex beat moves in the direction of the mesial line, either horizontally in or about the fifth interspace, or obliquely upwards from the neighbourhood of the sixth, its force and character are frequently found to undergo modification. The feeble impulse grows in power, the thrill, epigastric pulsation, the heaving of the chest wall diminish in force and distribution or subside altogether." There is increase in volume, diminution in frequency of pulse, the extremities improve in colour, etc. Dilated cutaneous venules may shrink or disappear; bruits may not be altered; there is rapid correction of anæmia; the notch in bipartite dulness corresponds with auriculo-ventricular fibrous ring, and convexities from it to distended chambers; the heart at the outset is passive, the initial

change being increase of arterial capacity with diminished peripheral resistance ; the rise of the heart in the chest is probably due to diminished weight of blood in cavities, and partly to increased strength and contractility of great vessels ; sphygmograms show first an enlargement of lumen with increase of diastole, later a return of normal tension.

Sir W. Broadbent (*ibid.*, March 28, 1896) says that the fallaciousness of auscultatory percussion is shown from Bezly Thorne's tracings, which make the upper limit of heart dulness extend almost as far as the right nipple line ; also the bipartite outline at the base does not occupy the site of the auriculo-ventricular fibrous ring, either of the right or left side, but occupies the place of the pulmonary artery or aorta. The fibrous ring thins out and yields as much as the muscular wall ; auscultatory percussion leaves room for exercise of imagination, and its results are untrustworthy. No doubt the volume of the heart diminishes under saline baths and movements, but a similar change takes place under other methods and from various causes. "The Schott treatment has undoubtedly potentialities of usefulness in certain forms of heart disease, and it is a matter of great interest and importance to ascertain with some degree of certainty and precision in what class of cases it is of most service. No advance can be made in this direction while it is employed indiscriminately in all forms and stages of heart disease, including cases where perfect compensation has been attained, and cases where no real heart affection exists, nor while statements are made which seem to imply that it is equally efficacious under all circumstances. It must be borne in mind too that any treatment which is powerful for good can also, when misapplied, do harm : grave risk, for instance, is incurred when the Schott methods are practised in cases of aneurysm."

Herringham (*Brit. Med. Journ.*, September 19, 1896) had carefully tested the value of auscultatory percussion on the cadaver, and had concluded that it had its drawbacks and was not superior to the ordinary method of mediate percussion. His conclusions were :—“(1) That mediate percussion as ordinarily practised is so extremely accurate that it leaves little to be desired ; (2) that auscultatory percussion, if its fallacies are avoided, is over the soft parts about as accurate ; (3) but it is open to so many difficulties, and is so limited in its application, that the old method is very much to be preferred.”

This point was also alluded to by speakers in the debate at Carlisle. Thus **Leith** did not think that the cardiac outlines

could be accurately defined during life, especially that of the right side. He hoped that the Röntgen method might aid in this endeavour. It was improbable, from anatomical and physiological reasons, that the heart really shrank with such "alarming rapidity."

6. Criticisms of the Nauheim treatment.

There has been a fairly general consensus of opinion amongst those who have practised the methods advocated by the brothers Schott as to the benefits derived from them, criticism being for the most part directed to the interpretation of the cardiac signs, and to the hypothetical explanations of the effects produced. On the general question, **Symons Eccles**, in an address on "Mechano-Therapy of Cardiac Disease" (*West London Med. Journ.*, October, 1896), expressed his belief that equally good results might be obtained by other means. The exercises were those which had been carried out in Sweden for many years, and the effect of muscle-kneading on the pulse rate had long been known. The Schott treatment had been said to be specially adapted for all valvular affections not complicated by serious myocardial degeneration, by aneurysm, or advanced arterio-sclerosis, for simple dilatations, functional debility, irritability, and tachycardia, whilst its careful use in early stages of arterio-sclerosis and aneurysm had been advocated by Bezly Thorne. Yet the same object could be more safely obtained by rest and passive exercises, where the action of the heart was more under control. The variations in pulse rate and cardiac area were observed in cases treated by massage, and they were not always permanent. He had records of cases treated by passive exercise where permanent benefit had been obtained, including cases of dilatation of the left ventricle, mitral disease with dyspnoea and tachycardia, post-influenzal cardiac irritability, and anæmic obesity with syncope. On the other hand, he knew of cases of aortic regurgitation, mitral disease and anæmic obesity which had relapsed and had subsequently been treated at Nauheim. No doubt some of the benefit derived from Nauheim was due to the regulation of habits of life, but as regards the exercises, he preferred massage, Swedish exercises, and the graduated locomotion advocated by Oertel.

G. Herschell (*Lancet*, February 15, 1896) had tried baths containing chloride of sodium and calcium without result, and in some cases with ill effects. He thought harm was being done by the indiscriminate use of the muscular exercises. (In a later article he suggests the employment of apparatus for the resisted movements in place of an assistant.) Many of the cases treated at Nauheim were examples of functional disturbance and

commencing degeneration, and such might be benefited. He expressed his belief that some patients went to Nauheim whose valvular disease was compensated, and that the treatment did harm by breaking down the compensation, as in a case of aortic disease which he related. It was pointed out by **R. Browne** (*ibid.*, February 29) that the good effects of the Nauheim baths were due to the free carbonic acid, which was absent from those given by Herschell. **Kingscote** also (*ibid.*, March 21) replied to Herschell's criticisms, giving details of seven cases benefited by the Nauheim treatment. He said that, "speaking generally, the cases most benefited have been gouty heart, fatty, post-rheumatic dilatations, with or without valve disease, post-influenzal, anæmia, obesity, tobacco heart, chronic congestions, and sub-mammary pains." On the other hand, **Crosby** (*ibid.*, March 28) considered that Kingscote's cases might have done well on other recognised modes of treatment.

7. General considerations upon the Nauheim treatment.

The abundant literature that is now available as to the method of treatment carried out at Nauheim—literature which has been vastly increased during the past year—should enable fairly accurate conclusions to be drawn as to the practical utility of the measures and their advantages over other plans for the relief of heart failure hitherto employed. And, although the advocacy of some has perhaps been more enthusiastic than the facts warranted, there is no denying that, with rare exceptions, the trend of opinion amongst all who have had personal experience of it is highly favourable to the treatment. It is clear from the writings on the subject, and especially from the admirable analytical study given by Sir T. Grainger Stewart at the Carlisle meeting of the British Medical Association, that this combination of a regulated system of saline baths and an equally systematised and well regulated form of muscular exercise has a distinct place in cardiac therapeutics. It is also clear that the one particular in which this method mainly departs from previous lines of treatment is in that for which Nauheim has long been celebrated, namely, the system of baths. In massage, in Swedish gymnastics, and in the well-known method of Oertel, the value and importance of muscular action for the promotion of improved metabolism, and the improvement of the nutrition of the heart, has been admitted; and in them we have resources for treatment of cardiac affections on lines very similar to those prescribed at Nauheim. It has also been shown that, apart from the moral and mental effect, in some cases doubtless of considerable service,

it is not a *sine quâ non* that the cardiac patient must reside at Nauheim in order to undergo this treatment. It is possible to prepare baths artificially which can be proved to have effects similar to those induced by the natural springs, whilst the exercises can, of course, be carried on just as effectively in any place. It cannot, however, be too strongly pointed out that, for a method of treatment which undoubtedly produces a great impression on the organism, much caution must be observed in the manner of its application, as well as careful discrimination in the selection of cases submitted to it. This obvious fact seems, indeed, to be fully recognised, and there can be little doubt that the striking results witnessed at Nauheim, and testified to by physicians who have visited it, are ascribable to the recognition of the precise limits to which it is wise or safe to go in the application of the treatment. The controversy as to the precise degree of improvement in the actual condition of the heart, as well as the differences in explaining the *modus operandi* of this form of therapeutics, need not militate against the broad fact—best appreciated by the subject himself—of improved health after undergoing a course of this treatment. The true test of the value of the treatment is to be found rather in the enduring character of the relief afforded, as compared with that obtained by the recognised measures of rest and the use of drugs.

CARDIAC MEDICATION.

8. "Some new vaso-dilators."

This was the title of the Bradshaw lecture, delivered in November, 1895, before the Royal College of Physicians, by J. B. Bradbury (*Brit. Med. Journ.*, November 16, 1895, and *Lancet* of same date). Starting from the knowledge of the vaso-dilating action of the nitrites and nitro-glycerine, it was sought to find a drug which should have a less evanescent effect than these, and "it seemed not improbable that the drug in quest might be found among the nitrate derivatives of the higher alcohols or their allies." The nitrates of erythrol, mannitol, and some of the sugars were therefore examined, and in comparison with the lower nitrates—methyl nitrate, glycol dinitrate, glycerol trinitrate (nitro-glycerine)—these were found to have a similar, but weaker and more prolonged, vaso-dilating action. A comparison of the results of perfusion experiments, and of the action of these several drugs on blood pressure, clearly proved that the "solid nitrates" not only possess the vaso-dilating property, but that they are much slower in producing their effects on blood tension, whilst at the same time these endure longer. These longer-acting

nitrates—erythrol tetranitrate, and mannitol hexanitrate—are the substances which may with advantage be introduced as remedial agents in certain forms of disease. The chief indication for their use is in conditions where the heart is labouring under increased work imposed on it by contracted arteries. Thus in many cases of cardiac pain, for which the nitrites and nitro-glycerine are of recognised value, it might be possible to anticipate and prevent anginal seizures by the administration of these new drugs. Similarly, their properties would make them useful in mitigating the effects of the high pulse tension of chronic Bright's disease. The use of iodide of potassium in aneurysm might often be replaced by the nitrates of erythrol and mannitol, which would more effectually dilate the peripheral arteries, and thus contribute to keeping "the circulatory system as far as possible in a state of physiological rest." In Raynaud's disease their continuous action would seem to render them of especial value. Some other applications of these remedies were also discussed.

Dose and administration.—"The dose of the solid organic nitrates may be taken as 1 grain; more may be given if it is thought necessary, but usually this amount will suffice. They may be taken in the form of pills or tablets, or in alcoholic solution. A solution of erythrol nitrate in the strength of 1 in 60 may be made, and 1 drachm may be taken in an ounce of water every four or six hours. Mannitol nitrate is not quite so soluble, but a 1 per cent. alcoholic solution can be prepared, of which $1\frac{1}{2}$ to 2 drachms may be taken in water. The solutions thus made are stable and free from irritating properties."

[This suggestive lecture is of value as illustrating one of the directions in which pharmacology has pointed out the way to new advance in therapeutics. It is also of much interest as exemplifying the fact that the chemical composition of a drug bears a direct relation to its physiological action, and the parallelism that exists between the nitrite and nitrate series in both these respects. It is to be hoped that the new compounds whose action has been so carefully studied in the laboratory will be tried on a sufficiently large scale in the morbid conditions in which their action seems to indicate their utility, as in the diseases named in the lecture. That they may constitute a valuable addition to our resources is very probable, just as the introduction of nitro-glycerine has, to a certain extent, been preferred to the more transiently-acting nitrite of amyl, and the nitrite of sodium has been found of service where a like prolonged effect is desired.]

9. Nitro-glycerine in angina pectoris.

The following abstract of a paper by T. Schott, of Nauheim

(*Therap. Monats.*, March, 1896), appeared in the *Epitome* of the *Brit. Med. Journ.*, August 8, 1896: "Nitro-glycerine (1) acts best in pure angiospastic forms of angina pectoris, not so well in cardiac pain due to aortic disease, and still less in stenocardia due to myocarditis, fatty or 'weak' heart. It has very little action on the cramp-like pains due to aortic aneurysm, and is often of no use at all in the pure motor neuroses of the heart; (2) its action on different people can never be predicted; (3) if toxic symptoms appear, gradually increasing doses can be given safely; after a small dose it is best to discontinue the drug altogether; (4) if no toxic symptoms appear, gradually increasing doses can be given safely. The form of administration is important, as Schott has found it to be most active given in a liquid medium and combined with tinct. capsici, spir. rect., and aq. menth. pip.; (5) it acts surprisingly quickly, and its action is generally at its height after two or three minutes; (6) it is generally necessary, when several small doses are without effect, to give larger doses; in some cases a single large dose acts best; (7) it is certain that much more than 1 milligramme ($\frac{1}{65}$ of a grain) can be given as a single dose."

10. Spermin as a cardiac tonic.

The following is reproduced from the *Brit. Med. Journ. Epit.*, July 4, 1896:—"Zahrzewski (*Trans. St. Petersburg. Pædiatric Soc.*, 1895-1896, p. 27) records the case of a girl of fourteen in whom, on the twelfth day of a very grave attack of diphtheria, there suddenly supervened cardiac arrhythmia and weakness, with general prostration, restlessness, and sleeplessness. A Pravaz syringe of a 2 per cent. solution of Poehl's spermin was injected under the skin, with the result that in half an hour the pulse became much fuller, firmer, and more regular, while the general condition greatly improved. After another injection on the following day the heart's action was found quite normal. On the nineteenth day there occurred two exceedingly severe attacks of heart failure, accompanied by stenocardiac phenomena, cyanosis, collapse, etc. In each instance the injection was followed in ten minutes by a striking relief. The symptoms returned again on the twentieth and twenty-sixth days, but rapidly vanished under the influence of spermin. Subsequently the injections were made regularly at bedtime daily for a week, and then every other day for another week. No further cardiac complications occurred, and the girl ultimately made an excellent recovery. It may be added that almost simultaneously with the cardiac symptoms there had developed paralyses of eye accommodation as well as of pharynx and soft palate. The ocular paralysis lasted for

three weeks, while swallowing and speech returned to normal condition in ten days."

11. Thyroid medication in cardio-vascular affections.

The known effect of thyroid medication in causing acceleration of pulse and promoting diuresis has led Huchard to advocate its application in certain cases where it is required to promote these conditions (*Journ. des Prat.*, April 18, 1896). The treatment requires caution, and signs of thyroidism should be watched for; as a rule, 1 gramme of sheep's thyroid should be given daily for three to five days, and then on every other day; or thyroid extract in tabloids may be given. The conditions in which the treatment is indicated are those of local syncope or asphyxia of extremities, hemicrania from vaso-constriction, some forms of angina pectoris, and commencing arterio-sclerosis. Huchard says that he would not dare to prescribe it in cases of asystolism or tachycardia, or in irregularity of action from myocardial weakness, nor in valvular affections, whilst exophthalmic goitre is an almost absolute contra-indication to it.

[It may well be doubted whether the action of thyroid substance is so effectual in the conditions named as the more certain vaso-dilators, such as the nitrites. It is noteworthy that some have even prescribed thyroid extract in Graves's disease with benefit, although the symptoms of that affection so closely resemble those of "thyroidism."]

12. Theobromine as a diuretic in cardiac and renal disease.

Huchard (*Bull. Gén. de Thérap.*, January 23, 1896) points out that the "diuretin" of commerce regarded as a compound of salicylate of soda and theobromine is really a mixture, being nothing else than theobromine, caustic soda, and salicylate of soda. Theobromine in doses exceeding 3 grammes excites severe temporal headache. It has a direct action on the renal epithelium, and rarely excites albuminuria; its action on the kidney is independent of any increase of arterial pressure, and it does not act directly on the heart. It rapidly induces diuresis, which persists after the drug has been discontinued. Huchard considers it to be one of the most reliable diuretics known—of especial value in cases of cardiac disease with renal sclerosis, as well as in non-compensated valvular disease. The concomitant use of digitaline or caffeine does not increase its diuretic effect; but, in order to prolong this action, there may be given for three or four days after the last dose $\frac{1}{2}$ to 1 milligramme of digitaline per diem. Theobromine has no cumulative action, and in order to get its

full effect it is necessary to give as much as 3 to 5 grammes daily for six days. It may be prescribed as follows:—On the first day, 3 grammes in 6 cachets of 0.5 gramme; the second day, 4 grammes in 8 cachets; the third day, 5 grammes in 10 cachets, this amount being continued for three or four days. But sometimes this amount will cause severe headache, especially temporal. The diuresis appears on the first day of treatment, unlike digitalis, the effect of which is not evident for the first two or three days. This diuresis is quite as abundant as that produced by digitalis, and more so than that produced by caffeine, it often succeeding where these drugs have failed. In some remarks on this paper **Bardet** (*ibid.*, February 8, 1896) considered that theobromine did have some action on the central circulation, and failed to understand what was meant by its action on renal epithelium, which plays a passive part in renal secretion. He believed that it did act by increasing arterial tension. **Huchard**, in reply, reiterated his belief that theobromine does not act like digitalis, and divided diuretics into three classes—cardio-vascular, hepatic, and renal.

GRAVES'S DISEASE.

13. Thymus feeding in exophthalmic goitre.

D. Owen, who first drew attention to the benefit obtained by thymus feeding in Graves's disease, has again written on the subject, and referred to the published records of others (*Brit. Med. Journ.*, October 10, 1896). He continues up to date the history of his first case in which the treatment was commenced (accidentally) in 1893; the record to July, 1894, when the patient was apparently quite recovered, was previously reported (see "Year-Book," 1896, p. 25). The patient was obliged to discontinue taking the thymus that autumn, owing to its nauseating effects, and when after an interval of three months he returned to it, owing to a sense of increasing weakness, he failed to experience benefit. The relapse was complete. In March, 1895, the thyroid was large and pulsating, heart's action tumultuous, irregular, pulse over 140, marked tremors, much emaciation. Half an ounce of calf's thymus was taken, and the dose repeated next morning. This resumption of the diet was rapidly followed by improvement, and although gastro-intestinal troubles prevented anything like a continuous resort to the feeding, he continued to improve through the winter of 1895. There has been some return of symptoms since, with palpitation, weakness, and some prominence of eye-balls, but no goitre or tremors, and he has gained flesh. But it is added, "the patient is not nearly so well as he was two years ago, but it must be noted that during the last eighteen months he

has taken much less thymus than before on account of its nauseating effects, and for nine months none at all." Owen now adds two other cases, one in which the raw gland was taken, the other treated by a glycerine extract (one lobe to an ounce) prepared by Messrs. Woolley. In both these cases benefit was marked. He also details the published observations of others, and discusses the possible *rationale* of the good effects observed. From this it appears that the thymus may have a physiological action opposite to that of the thyroid, which alone has been yet investigated; whilst there are facts suggesting that in their relation to the nervous system these two ductless glands are antagonistic. It may be useful to quote the references given to articles in which this treatment of Graves's disease has been described:—Cunningham (*Med. Record*, 1885, vol. i., p. 742); Mikulicz (*Berlin klin. Woch.*, April 22, 1895); R. T. Edes (*Boston Med. and Surg. Journ.*, January 23, 1896); S. Solis-Cohen (*Philad. Polyclinic*, August 31, 1896); *ibid.* (*Philad. Polyclinic*, February 29, 1896); N. McKie (*Brit. Med. Journ.*, 1896, vol. i., 656); Watson Williams (*Clin. Journ.*, December 11, 1895); Maude (*Lancet*, July 18, 1896); C. Todd (*Brit. Med. Journ.*, July 25, 1896).

Maude (*loc. cit.*) relates four cases in which thymus tabloids were given, the effect in one case under observation for eight years being much better than under any other treatment. His conclusions are interesting. He says:—"In the last three cases I have given I cannot claim that the rapidity and maintenance of improvement have been more than might occur under other treatment or under none at all; but I am prepared to assert that the value of thymus seems as great as that of any other drug, such as belladonna. It certainly does improve the deranged heart action, but it seems more particularly to lessen the gastrointestinal symptoms, and the tremor and general muscular weakness. Three of my cases have presented great psychical alteration, and in all of them the mental state has improved readily. In none of my patients was any effect produced in the size of the thyroid; in fact, in one of them it steadily increased."

C. Todd (*loc. cit.*) records the case of a girl, aged twenty-two, in Shoreditch Infirmary who had suffered for three years from palpitation and for one year from thyroid swelling. All manner of treatment had been tried without avail, and she was getting worse, when thymus was given in doses of from 30 to 100 grains of the dried gland. On the third day the pulse fell from 156 to 130, and at the end of three weeks to 72; there was not much reduction of the goitre, but the exophthalmos was lessened.

14. Intestinal antiseptics in Graves's disease.

W. H. Thomson believes (*New York Med. Record*, October 17, 1896) that exophthalmic goitre is primarily due to gastro-intestinal ptomaine poisoning; he considers that meat diet is harmful, and advises that subjects of this disease should be restricted to a milk diet for two years. He also counsels the systematic use of mercurial purgatives, such as the blue pill, followed by a saline; or of $1\frac{1}{2}$ grain to 2 grains of calomel, mixed with 40 grains of sugar of milk, and divided into six powders, of which one is to be taken every fifteen minutes until the whole has been taken, followed by a saline draught three hours later. Under this medication repeated once a week, he has found the tachycardia diminish, and the digestive and nervous symptoms improve. It is continued by the systematic use of intestinal antiseptics, as phenol bismuth, 4 drachms, sodium benzoate and bismuth subcarbonate, of each 2 drachms; to be divided into forty-eight capsules, of which two are taken an hour after meals; or naphthol bismuth instead of the phenol compound, or salol, 1 drachm; ichthyol, half a drachm; sodium bicarbonate and bismuth salicylate, of each 3 drachms; the powder to be similarly divided into forty-eight capsules, of which two are taken an hour after meals. He has also used benzosol in doses of 5 to 10 grains. He is sure that intestinal antiseptics exert a specific control over the vascular and cardiac disturbance in Graves's disease in marked contrast to the inefficiency of cardiac sedatives, and that they also exert a favourable influence on the nervous symptoms as insomnia, tremors, etc. At the same time strophanthus may be given as an adjuvant, or tinctura belladonnæ where there is dyspnœa and palpitation, but digitalis is of no use. Tinctura aconiti in 5-minim doses may be given night and morning when there is violent action of the heart.

15. Treatment of paroxysmal tachycardia.

Chauffard records a remarkable case in which the intravenous injection of artificial serum rescued a patient suffering from paroxysmal tachycardia from impending death (*Bull. Méd.*, April 22, 1896, abstract in *Bull. Gén. de Thérap.*, Oct. 15). All ordinary means had failed to diminish the pulse-rate (196 to 220) or raise the arterial tension, and on the fifth day of the attack, when the patient was apparently moribund, he administered an intravenous injection of 1,250 c.c. of "artificial serum." The pulse fell to 100, but tension was still very low. An hour later this pulse rate was still maintained, and the tension had risen. The next day there was a critical diarrhœa, which on the third day was replaced by polyuria, such as ordinarily ensues on intravenous injections.

DISEASES OF THE LUNGS AND ORGANS OF RESPIRATION.

BY GUSTAVE SCHORSTEIN, M.A., B.M. OXON., M.R.C.P., D.P.H.,

*Assistant Physician to the London Hospital, and to the Hospital for Consumption
and Diseases of the Chest, Brompton.*

I.—Literature.

II.—Pulmonary Tuberculosis.

(a) Preventive measures, and the treatment of early cases in sanatoria.

(b) Serum treatment.

(c) Special drugs.

(d) Some points in the diagnosis of early cases and of stages of the disease.

(e) Surgical treatment.

(f) Food in pulmonary tuberculosis.

III.—Diseases of the Pleura.

IV.—Abscess of the Lung.

V.—Bronchiectasis.

I.—LITERATURE.

The special literature on diseases of the lungs and pleura has been abundant since the last issue of the "Year-Book." Though no very striking advance has been made, much of it is valuable. Arthur Ransome's "Treatment of Phthisis" (Smith, Elder & Co.), and Harris and Beale's "Treatment of Pulmonary Consumption" (H. K. Lewis), are complete summaries of our present knowledge on the subject, and the worth of practically every method used is weighed with much judgment. Mr. Stephen Paget, in his "Surgery of the Chest" (John Wright & Co., Bristol), has made a distinct addition to our knowledge of what is admittedly a very difficult subject, and prepared an unusual pleasure for everyone who reads his work. It is one of the most charming and most readable medical books that has appeared for many years, crowded with records of interesting cases, and giving

a sane and clear idea of the present possibilities and limitations of surgical interference with the lungs.

In France Prof. I. Straus's "*La Tuberculose et son Bacille*" (Rueff et Cie., Paris) is in every sense a giant piece of research. Though it extends to nearly 900 pages, there are comparatively few that are dull. There has been a large number of small books and pamphlets on the treatment of tuberculosis of the lungs in sanatoria, both in France and Germany, and of these Dr. S. A. Knopf's "*Les Sanatoria, Traitement et Prophylaxie de la Phtisie Pulmonaire*" (Paris, Carré) is, perhaps, most worth reading.

II.—PULMONARY TUBERCULOSIS.

(a) Preventive measures, and the treatment of early cases. (Seaside hospitals for children and sanatoria.)

Nowhere else to such an extent as in Great Britain has the value of preventive measures been recognised. Much has been done along many lines :—

- (1) Improved drainage and increased dryness of subsoil.
- (2) Better ventilation of houses, and enlargement of air space about houses.
- (3) Supervision of trade processes leading to pulmonary tuberculosis.
- (4) Gradual spread of knowledge as to treatment of sputa, and lessening of danger from that source.

(5) The valuable results of the last Commission on Tuberculosis, forming a basis for the work of the present Commission, will lead to legislation which will ensure the thorough supervision of our milk and meat supply and their freedom from tuberculous infection.

But much more than this might and should be done. The paralysing effect of the belief that pulmonary tuberculosis is very largely hereditary has to some extent hampered action. There is no doubt that in time hereditary influence will be looked upon as a less and less important factor, and our power for help will be increased proportionately as we acknowledge that surroundings are the most important factor, and that surroundings may be altered.

If we contrast the enormous prevalence of tuberculosis of the lungs in towns with the ludicrously insufficient means for adequately treating such cases, it is very obvious that there is need for some further measures.

Most medical men will readily grant the following postulates:—

(a) Cases of early pulmonary tuberculosis do badly on the whole in towns if left in their own homes.

(b) Cases of early pulmonary tuberculosis do not do well in general hospitals in towns.

(c) Cases of early pulmonary tuberculosis on the whole do well in the special hospitals in towns.

(d) Cases of early pulmonary tuberculosis do still better in special hospitals out of towns.

(e) Such special hospitals are in no sense in any way a source of danger to the neighbourhood.

A few moments' consideration will show that it is quite impossible in any town at present for the special hospitals to accommodate as in-patients anything more than a very small fraction of the cases of early pulmonary tuberculosis among the working classes. The great bulk crowd to the out-patient departments of the special and general hospitals, in many cases derive benefit, but in many others fail to do so simply from want of favourable surrounding circumstances at home. It is not only the patient who suffers: the house in which he or she lives becomes infected, and it is now clearly proved that such an infected house may become a very present source of danger to the other inmates thereof.

Can anything further be done? Rigid notification and isolation of pulmonary tuberculosis on anything like the same lines as are now adopted in scarlet fever, diphtheria, etc., are out of the question. Compulsory notification without isolation, but accompanied by the supervision of the sanitary authorities as far as sputum disinfection and the disinfection of rooms are concerned, would be of great use. In a very large number of cases, of course, it is unnecessary; the work is already being done by the medical men in attendance. But among the poor, among hospital and dispensary patients, though sputum leaflets with directions are distributed largely, no inspection of houses is carried out.

But valuable as this would be, it does not get at the root of the matter. The patient does not have a fair chance unless he is removed out of the town; and the relatives are needlessly exposed to danger. That tuberculous patients may be massed together without the least danger to their surroundings in favourable circumstances has been proved up to the hilt by the records of the various consumption hospitals; and such hospitals have been proved to be of no danger whatever to the inhabitants of any houses near.

It has been repeatedly stated that particularly high air, or particularly dry air, is necessary for the proper treatment of pulmonary tuberculosis, and that the conditions in England are not favourable. Gradually it is becoming clear, from the records

of Görbersdorf and other similar institutions, that purity of air is the main essential factor, on a dry subsoil. And the numerous cases, that must come into everyone's experience, of rapid recovery—temporary, of course, in many cases—when the patient goes into the most varied country districts in England, amply bear this out. Pure air, dry subsoil, rest, proper feeding, and supervision are obtainable as well here as elsewhere; and out of the towns a fair amount of sunshine.

Such change of surroundings would be of immense value to two classes of patients—(1) Anæmic children of towns; (2) Early tuberculosis in adults.

First, I would advocate the building on the coast of hospitals for anæmic town children, especially for those from homes where there are tuberculous relatives, for the reason that such children are chiefly exposed to infection. It has been proved that sea-air is almost a specific for such. A little less money spent on School Boards and a little more money spent on health would go a long way, and be amply repaid later by an increase of vigorous bodies and a decrease of mental weeds. There is not a shadow of a doubt that much tubercle in adolescents might be staved off by timely treatment of the children; and the value of the working individual from twenty to thirty-five is so great that money spent might even prove ultimately not to be altogether a bad investment. The French child hospitals at Bercq-sur-Mer have already shown their value.

Secondly, there is an urgent need of sanatoria for the treatment of pulmonary tuberculosis in the neighbourhood of our large towns. Such sanatoria should be well built, comfortably appointed, on dry sites, with as much sun as possible, with abundant air space, large, roomy, well-heated and well-ventilated wards, and free opportunity for being out in the open air in verandahs under shelter. Good management and good feeding arrangements are, of course, indispensable. They should hold 150 to 200 patients at most. Half a dozen such in the neighbourhood of London could be filled in a week, and there is a similar need in all our large towns. Only in this way can the best possible be done for both the patient and relatives. It should be done, but the means for doing it are not so obvious. Private charity is taxed to such an extreme that it is doubtful whether it can stand such a further enormous strain. If the municipalities take the question up, the funds for providing such sanatoria must come from the pocket of the ratepayer, who is beginning already to be restive at the large demands for fever hospitals.

The need has been felt in other countries as much as in

England, and it is satisfactory to see the large amount of attention that is being paid to the subject both in France and Germany. Among many interesting contributions the two most striking are "Von der Freiluftbehandlung der Lungenschwindsucht und der Errichtung von Heilstätten für mittellose Tuberkulöse" (Klinische Vorträge, von Prof. v. Ziemssen. Leipzig; F. C. W. Vogel) ["On the Open-air Treatment of Consumption and the Founding of Sanatoria for Poor Consumptives"], and "Les Sanatoria," by S. A. Knopf, published in Paris by Georges Carré.

Knopf's book is more than thorough. He postulates that tuberculosis of the lungs is curable, but only in establishments specially arranged for its treatment. Every patient, therefore, with tuberculosis of the lungs should, if possible, be brought into such an establishment. No one should be refused because he is too ill—first, because perhaps he may be cured, and even the wisest of doctors be mistaken; and, secondly, because in such a place he is at least harmless. There should be two kinds of sanatoria: in the neighbourhood of the larger towns sanatoria to which all tuberculous patients, without any selection, might be brought; and then another special kind of sanatoria giving more favourable chances to certain kinds of case, as by the sea, and so forth. Knopf agrees with most observers that there is no danger whatever in many consumptives being together.

(b) Serum treatment.

In the last number of the "Year-Book" a full account was given of Maragliano's method of serum inoculation. The serum is obtained from dogs, horses, and asses who have had injected into them not living tubercle bacilli, but the "highly toxic principles extracted from them." After a series of such injections the animals are reported to be quite immune against intravenous injection of active human tuberculous matter. The potency of the serum is tested by injecting it simultaneously with tuberculin into tuberculous animals; tuberculin by itself produces a definite reaction when injected into a tuberculous animal; with a certain quantity of serum added, it produces no reaction. What precisely is the nature of the "highly toxic principles" extracted from tubercle bacilli? What is the nature of the serum so produced? It is difficult to test one unknown substance, Maragliano's anti-tuberculous serum, by another whose qualities are largely unknown, tuberculin.

The treatment has been used largely in Italy, France, and Germany, and the results obtained merit very careful attention. In German hands it has for the most part failed. From the

Epitome of the *Brit. Med. Journ.* the following abstracts of papers are taken:—

Maragliano (*Gaz. Med. Lombarda*, April 20, 1896) gives a summary of the results obtained in the treatment of tuberculosis by his serum in his own practice and in that of his colleagues and other practitioners who have reported to him. The statistics include all the cases of which he has knowledge up to February 15th, 1896. The total number of cases is 412. These are subdivided as follows: (1) Destructive broncho-pneumonia with cavities, 93; of these, 7 were apparently cured, 35 notably improved, 34 *in statu quo*, while in 17 the disease went steadily on to a fatal issue. (2) Destructive broncho-pneumonia without demonstrable cavity, and with microbic associations (that is, mixed infection), 85; of these, 9 were apparently cured, 45 improved, 24 *in statu quo*, and 7 died. (3) Diffuse febrile broncho-pneumonia, with or without destructive processes, 104; of these, 7 were apparently cured, 55 improved, 32 *in statu quo*, and 10 died. (4) Diffuse non-febrile broncho-pneumonia, with or without destructive processes, 43; of these, 2 were apparently cured, 31 improved, and 10 remained stationary. (5) Circumscribed febrile broncho-pneumonia, 54; of these, 20 were apparently cured, 31 improved, and 3 remained stationary. (6) Circumscribed non-febrile broncho-pneumonia, 33; of these, 22 were apparently cured, 9 improved, 2 remained stationary. The author explains that when he speaks of "cure" he means only the complete disappearance of every symptom of the disease for the time; he declines to commit himself to any statement as to the permanence of this state of things. The number of "cures" varies in direct ratio to the severity of the disease when treatment is begun. In the cases here summarised the proportion of "cures" in the cases with cavitation was 7·76 per cent. The proportion rises through intermediate forms till in cases of circumscribed non-febrile tuberculosis in which the treatment has been fully carried out it reaches almost 100 per cent. In 98·30 per cent. of the cases included in the statistics, all the ordinary methods of treatment had been tried in vain. Maragliano sums up as follows:—(1) The remedy has been proved to be quite innocuous. (2) It has caused subsidence of fever. (3) It has had a modifying influence on local morbid processes. (4) It has caused the bacilli contained in the sputum to diminish in number or to disappear.

Renzi (*Rif. Med.*, January 11th, 1896) gives an account of a series of cases treated by injection of Maragliano's serum. In three patients, whose condition was rather serious, 10 c.cm. were injected at one time, and repeated at intervals of three to eight

days two or three times. In all of these, when so treated by the larger dosage, the injection was well borne, and no local bad effect followed, with the exception of slight tumefaction on one occasion. In all there was increase of appetite and a certain sense of well-being, so that it was possible to increase the daily amount of food. Of 22 instances the weight increased in 12, remained stationary in 1, diminished in 9. Inspiratory force increased in 14, remained stationary in 8. The temperature increased in 10, remained stationary in 2, diminished in 10. The amount of sputum and the quantity of bacilli diminished in 10 and 13 respectively, being stationary in the rest. In all instances the moist sounds gradually diminished, disappearing in 2. These patients, for the most part, had circumscribed lesions with slight pyrexia, or were non-febrile. The author believes that the serum stimulates the lymphatic tissue and increases the number and activity of phagocytes, in this way exerting its curative action. The author is strongly of opinion that the use of the serum has very important results, but points out that it is more favourable in better-class patients than in hospital cases, as there are less frequently secondary lesions. His experience also is that no inconvenient results follow its use, and even the appearance of a very slight amount of serum albumen in the urine does not modify this opinion. At the same time he is careful to point out that no good may be obtained by employing too large a dose.

Cattaneo gives an account of two cases of infantile tuberculosis treated with Maragliano's serum (*Gazz. degli Ospedali*, March 14, 1896). He first points out the advantages offered by tubercle in children for the observation of this method, presenting as they often do local lesions which tend readily to infect other tissues, and thus forming what may be termed test cases. In each of the cases that he records the patient was kept under observation for twenty days previous to beginning the treatment, and during the whole of this time, as also during the treatment, the following amount of food was given:—Bread, 100 grammes; rice, 150 g.; broth, 250 g.; meat, 80 g.; two eggs; red wine, 100 g.; Marsala wine, 100 g.; milk, 200 g. The first patient was a female child aged three, whose father died of pulmonary tubercle, and two brothers of pulmonary disease, probably tubercle. Poor development, flaccid muscles, dry skin, enlarged glands, enlargement of the liver and spleen, 40 per cent. hæmoglobin, 4,624,000 red blood-corpuscles; evening temperature with maximum 39° C.; body weight, 7·55 kilog. The treatment consisted of fifty injections in all, at first on alternate days, then, being well borne, every day. In the first fortnight there was a rapid improvement

in the general condition and appetite, the child being more brisk and playful. Hæmoglobin 55 per cent., red blood-corpuscles 4,820,000, decrease in the number of white blood-corpuscles. At the end of the treatment there was no cough, the liver was reduced in size, the spleen did not protrude from under the ribs, the glands were smaller. Hæmoglobin 55 per cent., red blood-corpuscles 4,584,000, no fever, weight of the body 8 kilog., general condition good, appetite good, patient active and playful. The second patient was a female child aged five. Family history negative, dentition late; intestinal disturbances; slight ear discharge; some cough, dyspnœa; occasional pyrexia; no improvement by general treatment. At the time when the serum treatment was begun the child was miserable in appearance, wasted, muscles flaccid; the mucosæ pallid; skin dry, scaly; enlarged glands; harsh breathing at each apex, with sibilant *râles*; moist *râles* lower down; abdomen tumid; liver and spleen below the costal margin, the latter slightly. Hæmoglobin 50 per cent.; red blood-corpuscles, 3,000,000; indicanuria; no pyrexia; body weight, 11.75 kilog. The treatment included fifty injections. During the first fortnight there was some improvement in the general condition and appetite, with diminution of both dry and moist sounds and cough. Hæmoglobin, 65 per cent.; red blood-corpuscles, 4,000,000. In the last three weeks of the treatment there was very slight pyrexia, due to some slight local suppuration at the seat of injection, which subsided on discharge of some pus. At the end of the treatment there was great diminution in the dry sounds, no moist being heard; decrease in the size of glands; hæmoglobin, 60 per cent.; red blood-corpuscles, 3,624,000; no fever; body weight, 11.8 kilog.; general condition good, appetite fair, child cheerful. The writer looks upon these cases as very instructive, showing as they do considerable improvement in the tuberculous condition, with marked change for the better in the general state of the patient's health. They are also of importance in showing the harmlessness of the treatment. As these patients were both young and delicate children, they would be expected to exhibit whatever bad effects might accrue from the method. The result was, however, only a slight local suppuration in one, and even that was practically insignificant in its effect.

Regnier (*Progrès Méd.*, February 8th, 1896) says the serum has no special pyretogenous action. All depends on the dosage employed. In the usual therapeutic doses to which the patient is accustomed there is no elevation of temperature, nor is there any painful or local reaction. Doses above 2 c.cm. may cause transitory elevation of temperature, which may at times reach a

considerable figure, more especially in the case of tuberculous subjects. This may last two or three days, and is not accompanied by any local manifestation in the affected pulmonary areas. The different action on the temperature does not seem to depend on the severity of the disease, but rather upon individual peculiarities, which may be looked upon as independent of the tuberculous lesions, but depending upon other factors, amongst which the influence of the nervous system is preponderant. It has no effect on the circulation, except that after a considerable time some people show a slowness of pulse and increase of arterial pressure. These injections cause augmentation in the number of white blood-corpuscles, which may be considerable. The red corpuscles and hæmoglobin increase with the general improvement. The urine shows no appreciable modification, except in some cases where large doses have been employed, when there may be peptonuria, but never glycosuria nor albumen, and no increase in the toxicity. The influence on nutrition is, as a rule, satisfactory. After a few injections, appetite increases, as does also the weight of the body proportionally. In cases of tubercle, with elevation of temperature, small doses—1 to 2 c.cm.—do not produce any immediate alterations in the temperature, but after a few days the pyrexia decreases, especially when it was well marked. Larger quantities—5 to 10 c.cm.—raise the temperature for a couple of days. Afterwards, the elevation produced diminishes, and the patients become apyretic. The injections produce an evident effect upon the areas of tuberculous broncho-pneumonia. In general, at the end of a month, sometimes sooner, these clear up, no more *râles* are heard, and breath sounds remain slightly harsh. These satisfactory results are obtained when there are only small numbers of associated micro-organisms. Cough disappears relatively to these changes, expectoration diminishes or disappears, and the bacillus ceases to be found in the sputum. The patients have a feeling of well-being after the injections, and state that they feel stronger and possess an amount of energy to which they had long been unaccustomed.

Cutaneous eruptions after serum injection.

Maragliano (*Rif. Med.*, December 13th, 1895) discusses the occurrence of certain cutaneous manifestations after the injection of the serum. The chief phenomena observed are : (1) Temporary erythemata ; (2) urticaria ; (3) phlegmonous infiltration of the subcutaneous tissue. All these symptoms have been observed after serum taken from normal unvaccinated animals. Maragliano believes that they are due to the serum *per se*, and not to the antitoxin dissolved therein. They appear in certain

individuals and not in others, probably because they possess irritable tissues, or because the particular serum is irritating, or from both causes combined. But from the fact that the same serum which proves irritating in one individual is non-irritating in another, the author believes that the chief cause lies in the susceptibility of the individual. When these cutaneous eruptions appear the dose of serum should be reduced to 1 cm., and given every two days; if this does not check the symptoms, the serum should be injected intramuscularly (in the nates), after which they hardly ever recur.

Investigations into the value of anti-tuberculous serum are being made in Great Britain at the present time, but no results on any sufficiently large scale are yet available.

Antistreptococcus serum has been used in several cases where a relapse after a quiet stage seemed to be due to infection by streptococci owing to the large numbers of these micro-organisms in the sputa, but here also the number of cases is too small to justify any deductions.

Tuberculin has for the present almost dropped out of sight, except for diagnostic purposes in cattle. Its use for diagnosis in the human subject will probably come to the front again before long. In the *Deutsch med. Woch.* (Nos. 6-8), Krause reports that it proved useful in seventeen cases, of which he gives full histories, both from the diagnostic and the therapeutic point of view.

Petruscky, in the *Zeitschrift für Hygiene* (1895, p. 450), proves the inefficacy of tuberculin against streptococci, and therefore its uselessness where the streptococcus invasion has become the main feature of the disease.

Balfour, in the May number of the *Edin. Med. Journ.*, gives a further report on two cases of pulmonary tuberculosis treated four years ago with tuberculin, and remaining quiescent, in one of whom the whole upper lobe had been involved.

Antiphthisin—Klebs's modification of tuberculin—has been largely used in America. The reports on its value in the *New York Med. News* and *New York Med. Record*, by Denison, Trudeau, and Baldwin, Ambler and Barbour, show no very definite results.

(c) Special drugs.

(1) *Creasote* and *guaiacol* continue to be the chief special drugs used in the treatment of pulmonary tuberculosis. Though no specific action on the bacilli has been proved, it is undoubted that in a considerable proportion of cases apparent benefit accompanies the addition of either to the treatment already employed. In some cases they do neither good nor harm; in others they produce gastric disturbance and must be stopped.

Daremborg protests against what he calls "creasotic orgies," and fixes the limit of a valuable dose at 15 grains a day: though more can be given in many instances with impunity, 15 to 20 grains a day may be regarded as a full dose.

Harris and Beale give a number of good formulæ for the administration of creasote. The best and most general is simply to dissolve the drug in cod-liver oil.

R Creasoti, ℥ v.—x.
Ol. Morrh., ℥ii.

Twice a day.

Many patients take it in this form exceedingly well.

As a mixture:—

R Creasoti ℥ iii.—x.
Sp. Chloroformi ℥ x.—xv.
Ext. Glycyrrhizæ Liq. ... ʒi.
Inf. Gent. Co. ad ʒi.

Two or three times a day.

If given in pill or gelatin capsules, it should be given with meals so as to ensure thorough dilution.

They quote also Continental prescriptions which have been found useful. These are closely imitated by the following:—

R Creasoti ℥ vii.
Tr. Gentian. ℥ xv.
Spir. Vin. Rectif. ... ʒi.
Vin. Malagæ ad ʒi.

And—

R Creasoti ℥ v.
Syr. Tolut. ʒii.
Rum ʒii.
Aq. destill. ad ʒi.

Both prove palatable to some patients who are unable to take the ordinary mixture given above.

The use of strong creasote vapour in the creasote chamber for pulmonary tuberculosis has not proved very successful. There are no results to show at all parallel to its value in bronchiectasis. In small doses dissolved in alcohol, on an ordinary respirator, it helps some forms of cough.

Where for any reason it is desirable to vary the method of administration, it may be given by inunction of the ordinary B.P. ointment, or a modification of Valentin Gilbert's ointment—

R Creasoti ʒiss.
Lanolini }
Adipis Preparat. } āā ʒi.
Ol. Olivæ }

or in suppository.

Abroad, subcutaneous injections of creasote have been largely used, the drug being dissolved in liquid vaseline or almond oil. Beginning with modest doses, it has been pushed to nearly ʒss. at a single injection, with the idea of so thoroughly creasoting the whole body as to render it no longer a good feeding-ground for the bacilli. It is amazing that greater disasters have not happened. There is no evidence whatever that the subcutaneous method offers any advantage over those more usually employed, and the pain and danger are obvious.

Guaiacol is much more expensive, but otherwise appears very closely to resemble creasote in its effect.

(2) *Lignosulfit*.—This preparation, which is being somewhat vigorously pushed at present, needs a very brief mention. Its value is most problematical.

In the preparation of pine-wood for paper-making and other purposes, the finely-chopped wood is boiled in a solution of sulphurous acid with lime and some other substances. Mineral matters and resins get separated off, and the wood-fibre is rendered pure and can be utilised. The fluid contains salts in solution, some ethereal oils, and resins, and some organic combinations of sulphurous acid. By mixing together this solution with some of the original concentrated solution of sulphurous acid, *secundum artem* (great stress is laid on the exact degree of concentration), a brownish fluid is produced. It is not unpleasant to the smell, and contains small quantities of sulphurous acid and sulphites, and a large amount of aromatic substances.

The directions for using it are to allow the solution to stand in open plates in the sick-room, and thus get evaporation into the air; or to allow the fluid to drip over a pine-bough hung from the ceiling, in which case the diffusion is more thorough; or to use it, well diluted with water, through an ordinary inhaler.

To all who are cognisant of the exceeding difficulty of destroying bacillary life with sulphurous acid it will at once be clear that no destruction of bacilli in the lung can possibly take place from such a solution. Hartmann and Heindl and Ehrlich have reported on it, and in some cases, when it has been used together with all other customary measures, patients have improved.

The fallacies are obvious, and comment is needless.

(3) *Ichthyol*.—In last year's "Year-Book" Scarpa's results in 150 cases of pulmonary tuberculosis treated by Cohn's method with ichthyol were recorded. Cohn (in the *Deutsch. med. Woch.*, July 9, 1896) gives an account of a further series of cases. In a very lucid article he distinguishes three possible methods of treatment of pulmonary tuberculosis:

(1) Open-air treatment of early cases, with proper diet and supervision, which at present is impossible except for a very small proportion of the community.

(2) Vigorous measures for the destruction of bacilli, and the improvement of air space in poor dwellings—only very partially possible, owing both to callousness of individuals and the difficulties of supervision.

(3) Drug treatment. The two drugs of proved utility, in Cohn's opinion, are creasote and cod-liver oil—both failing in many cases owing to the digestive troubles they set up.

Ichthyol acts in two ways—partly as hindering bacterial growth, partly in lessening nitrogenous metabolism; it has no subsidiary poisonous effects. While fully admitting the possibility of coincidence in the improvement of many of his cases, Cohn is keenly urgent for further trial of the remedy, as apparently in many instances the results are very satisfactory. He gives full accounts of the further progress of most of the cases recorded in 1894, many of which continued to improve.

He sums up his results as follows:—

There is no specific treatment for pulmonary tuberculosis.

Ichthyol has no direct effect on tubercle bacilli in the human body; whether pure cultivations of tubercle bacilli *in vitro* are influenced by the addition of ichthyol to the medium they are grown on must be decided by bacteriologists.

Ichthyol saves the strength of the human organism, and puts it in a better position to fight against bacilli that have entered.

The best results are obtained in early apex cases: in some, all symptoms and signs have disappeared under this treatment. Advanced cases are benefited; often, even, there is improvement in cases where creasote and cod-liver oil have quite failed. Ichthyol treatment fails in many cases of large excavation and high fever.

Ichthyol has the advantage over cod-liver oil that it can be taken at all seasons of the year (both summer and winter), and over creasote, that even in big doses it has no poisonous effects.

The best hygienic, dietetic and climatic treatment must be carried out at the same time.

The best way of giving it is—

R	Ichthyol	} āā part. æq.
	Aq. destill.	

Two to fifty drops three times a day, well diluted in water, before meals. A wineglassful to half a tumbler of water should be used for diluting.

Cohn finds that the slight nausea produced at first is rapidly overcome.

Unna, to whom its introduction in skin affections is due, has given it largely internally in tuberculous cases.

The drug is very nauseous, and patients are very averse from taking it in solution. It is advisable in such cases to try capsules containing 4 m., one or two of which are given with meals. The food will ensure thorough dilution. But given in this way also, many patients find it an impossible treatment.

(4) *On the use of small doses of calomel in combination with other drugs in the treatment of early cases of pulmonary tuberculosis.*—In the *Wiener Klinik* S. Edelheit calls attention again to the use of small doses of calomel in early stages of pulmonary tuberculosis as helping to increase appetite, lessen temperature, and aid in the absorption of inflammatory products. Direct effect on bacilli it has none. Its value has always been the subject of some dispute, especially in the more anæmic cases, where often it undoubtedly does harm. But in incipient mischief in a strong individual it is at times of service.

The two formulæ given are :—

R	Calomelanos	...	...	...	gr. $\frac{1}{7}$
	Creasoti	...	...	...	m $\frac{1}{2}$
	Tolut. Balsam.	...	...	...	gr. $1\frac{1}{2}$
	Ext. Acori Aromat. (G. & U. S. P.)				q. s.

M. fiat pil.

Three to six pills to be taken in the course of the day.

R	Acidi Benzoici	...	...	...	gr. $\frac{1}{15}$
	Calomelanos	...	...	...	gr. $\frac{1}{15}$
	Tolut. Balsam.	...	...	...	gr. ii.
	Creasoti	...	...	...	gr. $\frac{1}{2}$
	Ext. Acori Aromat. (G. & U. S. P.)				q. s.

M. fiat pil.

Three to six pills to be taken in the course of the day.

(5) *Perchloride of mercury.*—Giampietro (*Gazz. degli Ospedali*, No. 140, 1895 ; *Brit. Med. Journ. Epit.*, 1896, i., p. 71) gives the results of his experiments in the treatment of various cases of tubercle by the injection of sublimate. The majority of his observations were carried out in an institution for deaf-mutes under his care. The patients whom he subjected to this form of treatment were suffering from otorrhœa, rhinitis, conjunctivitis, diffuse tuberculous adenitis of the neck, groins, etc. In all his cases there were the usual signs and symptoms of chronic tuberculous disease, and all had previously been treated by the usual methods without exhibiting any improvement. A solution of 1 milligramme of sublimate was injected hypodermically per diem (with a Pravaz syringe). This was not at first followed by any manifest local effect, but after seven days the first signs of general

reaction appeared, the patients beginning to exhibit more energy. There was a slight rise of temperature and increase in size of tuberculous glands, and after about the twentieth day involution seemed to begin, so that about the fiftieth there was no more swelling, and the tumefaction of the glands seemed to have quite disappeared. At the same time other conditions, such as rhinitis and conjunctivitis, were very gradually improved, and the general health of the patients was very different. For two consecutive years the same patients were subjected to similar treatment for two months, and during this time there was no return of adenitis, and the appearance continued to be that of health. Induced by this satisfactory result, the author next made a trial of the effect of mercurial injection in a case of pulmonary tubercle. He quotes the following case: A cavalry officer, aged twenty-four, with strong tuberculous family history and double otorrhœa, received a kick in the chest from a horse. This was followed by slight hæmoptysis, pyrexia, and cough, with consolidation beginning at the right apex and subsequently appearing at the left, with extreme prostration, diarrhœa, etc. None of the usual remedies had any effect, so the author administered mercurial preparations, and in fifteen days there was great reduction in the prostration, pyrexia, and expectoration. Strength increased so that the patient was able to sit up in bed, and the diarrhœa completely disappeared. Examination of the sputa showed very few tubercle bacilli, and great diminution in the amount of elastic fibres, both these having formerly been abundant. The mercurial treatment was begun with the black sulphide by the mouth, but this was subsequently changed for injections of 1 milligramme of corrosive sublimate in 3 grammes of distilled water. Under this treatment the patient passed good nights, increased in strength and appetite, was able to walk about his room, and on physical examination the moist sounds had disappeared from the lungs. The author gives other cases in which he says the effects were equally good. He recommends that the injection should be continued for some considerable time, varying with the amount of disease. He then goes on to discuss the mode of action of mercury, and although he does not give any definite explanation, he believes that it is equivalent to its effect in syphilis.

(6) *Menthol*, *cinnamic acid*, *permanganate of potash*, and a combination of *phenol* and *pilocarpin* (Cyrus Edson); have all been used and praised for their effects; but the number of cases is not very large, and the results are somewhat uncertain.

(7) *Alcohol*.—The value of alcohol in pulmonary tuberculosis has been a vexed question, and much confusion has arisen, partly

from the fact that tuberculosis of the lungs frequently comes on in drunkards, and partly from the danger of excess. Ransome, in his "Treatment of Phthisis," quotes the experience of Thomas Harris at the Manchester Hospital for Consumption. The results are of considerable importance, and amply bear out the opinion of many as to the great value of alcohol in the treatment of tubercle of lung.

"Although we undoubtedly meet with cases of phthisis in persons of intemperate habits, I felt that in regulated doses, and under proper conditions, alcohol might be of service in the treatment of phthisis in the early stages of that disease. We must remember that phthisis in alcoholic subjects is probably due, not so much to the direct influence of alcohol, as to the fact that such people usually neglect their food, and also take the drug in such quantities as to disturb their digestion and impair nutrition.

"I commenced some observations on the effect of alcohol in the treatment of pulmonary phthisis in October, 1890, and continued the treatment during a period of nine months. During this time twenty-six cases were treated by this method; and whisky, containing 53 per cent. of alcohol by volume, was the form chiefly employed. For obvious reasons this was disguised; and the addition of liquid extract of liquorice and camphor water was found most effective for this purpose. The mixture was given regularly every four hours, day and night, and was continued during the stay of the patient in hospital. The average duration of such residence was eighty days. The dose to commence with was 2 drachms of pure whisky, diluted as above described, and gradually increased up to $1\frac{1}{2}$ ounce of whisky, which latter dose was continued during the stay of the patient in the home. A little food, such as bread and butter, was given with the dose to prevent any disturbance of the digestive processes by the alcohol. But during the night-time the nurses soon found that the patients were too sleepy to eat. When aroused for their four-hourly dose they would take it and at once go to sleep again.

"The cases were not picked ones; and it was felt that the most satisfactory way of forming an opinion on the treatment would be to compare the results, as regards increase in weight, with those seen among the patients in hospital at the same time, but who were not taking whisky, and who were under the care of my colleagues.

"My own patients were given the same diet, and were allowed cod-liver oil, or an emulsion of the same, exactly as the other hospital cases. In all cases the general health improved; the cough and the amount of expectoration, with two exceptions, also

diminished. In the majority of cases no increase in the number of bacilli in the sputum could be detected. In two or three cases, however, the number of bacilli was less on the discharge than on the admission of the patient. Not only did the patients feel better and gain in weight, but, in several instances where the gain in weight had been marked, the improvement in their appearance was decisive; it was not simply a question of having put on fat—they looked healthier. No case left the hospital in a worse state than that in which he entered it. As regards the physical signs, very little difference could be detected between those at the date of admission and the date of discharge of the individual.

“The average gain of the patients under the alcoholic treatment was far greater than that under any other of the treatments adopted in the hospital. The average gain in body weight of the patients taking whisky was two and a half times that of the average gain exhibited by the patients under any other form of treatment.”

These observations are of very great value. The dangers of producing the alcohol habit, or of later possibility of fatty changes in organs, or degeneration of liver and kidney, will, of course, suggest themselves at once to every practitioner, and will be borne in mind.

(d) The early diagnosis of pulmonary tuberculosis.

(1) By inoculation experiments.

In the vast majority of cases where tubercle bacilli are present in the sputa it is possible to stain and discover them by the ordinary methods. Occasionally, however, if they are very few in number, they are unavoidably overlooked, even after very thorough examination. If such doubtful sputa are carefully collected in a clean vessel, and a small quantity inoculated into guinea-pigs, under the skin of the thigh, it is possible to tell, according as the animal does or does not develop tuberculosis, whether there were or were not bacilli in the sputa. This method of testing in early doubtful cases has been used by several observers, and has met with the ordinary criticism that tests on guinea-pigs have no great value, as those animals develop tuberculosis so easily. Thomas Harris, of Manchester, records in the *Brit. Med. Journ.*, of April 11th, 1896, some experiments bearing on this point—“On some Cases of Chronic Non-tuberculous Pneumonia, and the Clinical Value of Inoculation Experiments in Guinea-pigs in the Diagnosis of Pulmonary Tuberculosis.” He sums up, after describing his cases, as follows:—“It will be noticed that the majority of the experiments here recorded have been negative in their results—the sputum, which was inoculated, not producing in the majority of cases tuberculosis. As stated at the commencement of this communication, those cases alone were

selected where either no tubercle bacilli could be found in the expectoration or where the cases presented some difficulties in interpretation. There were three cases in which a very few tubercle bacilli were found in the sputum, either before the time of inoculation or subsequent to it, and in each of these three cases the guinea-pigs became tuberculous. In the other cases no tubercle bacilli were ever found in the expectoration, and in no case did the animals become tuberculous.

“I think these experiments will show how reliable such experiments are in guinea-pigs if carefully performed, and that if expectoration from a human being, who is not affected with tuberculosis, is inoculated into guinea-pigs, and precautions are taken in the experiment to prevent contamination, the animals so inoculated do not develop tuberculosis; and that, further, a specimen of expectoration from a tuberculous pulmonary case in which tubercle bacilli cannot be found, even by observers accustomed to such an examination, when inoculated into guinea-pigs, may, and frequently does, produce tuberculosis in the inoculated animal, and so allows us to diagnose, with greater accuracy than we could otherwise do, the accuracy of the case.”

This method, which is sure to come into further and larger use, will assist in the diagnosis of cases of pulmonary tuberculosis at a stage where active treatment has the best chance of leading to recovery.

(2) *By tuberculin*.—In the *Brit. Med. Journ. Epit.*, 1896, i., p. 73, is an abstract of Granet and Vedel's report to the Académie de Médecine, on the use of tuberculin in the diagnosis of early cases of pulmonary tuberculosis. Twenty-five injections were given to fourteen patients suffering from (1) spinal meningitis, (2) Addison's disease, (3) cerebral meningitis, (4 and 5) infiltration of the apex of the lung without bacilli in the sputum, (6) old pleurisy, (7) recent pleurisy, (8) old cured arthritis of left shoulder with apical bronchitis, (9, 10, and 11) phthisis with bacilli in sputum, (12) locomotor ataxy after syphilis, (13) syphilitic meningo-myelitis, (14) doubtful intracranial tuberculosis. The authors think that this agent has fallen into undeserved disrepute, perhaps owing to too large quantities being used; the most serviceable dose being two-tenths to three-tenths of a milligramme of tuberculin for the first, and half a milligramme for a second, injection, diluted to 1 in 2,000. Conclusions: (a) In these doses tuberculin is quite harmless, and there is no risk of aggravating an existing tuberculosis; (b) in cases 1 to 5 sufficient reaction took place to make a diagnosis of tuberculosis certain; (c) in Nos. 6 and 7 reaction was absent

or doubtful; (*d*) absence of reaction does not exclude tuberculosis, since there was none in Nos. 9, 10, and 11. This may be explained by supposing the organism to be accustomed to the toxin, when these small doses would be useless. However, in advanced cases this test is not required; (*e*) No. 13 showed a slight reaction. It is known that syphilis, leprosy, and actinomycosis may react to tuberculin, and so the test is useful only if these do not complicate the case.

Two points of great interest come out in this report, both already sufficiently recognised, but needing emphasis, if tuberculin is to be again at all widely used. (1) In some cases there is no reaction where there is undoubted tuberculosis, proved by the presence of bacilli; and (2) reaction may occur in at least three diseases not due to the tubercle bacillus.

(3) *Leucocytosis in tuberculous processes*.—The systematic examination of the blood in pulmonary tuberculosis is only beginning to be looked upon as having any value at all. Indeed, it is impossible to say at present what the exact value of such examination will ultimately prove to be. As there are certainly many who are interested in the subject, I give here an abstract of the fullest paper that has yet been written on the point. It is by **Conrad Stein** and **Gottfried Erbmänn**, and appears in the *Deutsche Archiv für klinische Medizin* for December, 1895.

They examined systematically in hospital the blood of a large number of cases of pulmonary tuberculosis, and give a very full, laborious, and impartial account of their results.

They find an increase of leucocytes in cases of tuberculosis under the following conditions:—

- (1) Cavities in the lung.
- (2) Inflammatory processes at the end of a case of phthisis.
- (3) Chronic suppuration following on caries.
- (4) Tuberculous hyperplasia of glands, even where the lungs are not yet involved in much breakdown.

They trace the increased number of the white corpuscles, in the majority of cases, to the breaking down of lung tissue, and report many instances in which the leucocytes had been normal in number in the earlier observations, but increased largely when breakdown of lung commenced.

They further think they can show that there is some relationship between the amount of excavation and the number of leucocytes; so that with small cavities ($\frac{1}{2}$ in. to $1\frac{1}{2}$ in. in diameter) the increase may amount to 20,000 white corpuscles in a cubic millimetre, while a series of combined larger cavities in several lobes may raise the number to 70,000. In some cases, however

in spite of considerable cavity, the numbers of leucocytes were found to be normal. They point out that these differences are in entire harmony with the different types of the tuberculous process in the lung. In acute cases, with rapid breakdown and formation of ragged cavities, much leucocytosis; in chronic cases, with much fibrosis of lung and slow formation of cavities, little leucocytosis.

They agree very much with the position taken up by Maragliano at the Fourth Italian Medical Congress—viz., that the phenomena of the hectic stage of tuberculosis (persistent fever, loss of flesh, sweats, increasing organic “dystrophy”) have nothing directly to do with tuberculous infection, but are the result of practically a new disease on an old, due to the invasion of the damaged lung by streptococci, staphylococci, etc.

Leucocytosis is not simply the result of a mixed infection, but of a secondary infection starting in cavities; it runs parallel to the septicæmic fever of florid phthisis.

(1) In early phthisis there is a normal number of white corpuscles.

(2) In more advanced cases, but limited to the apices, or even spreading further, but without cavitation, there is still a normal number of white corpuscles.

(3) After attacks of hæmoptysis, in most cases they observed a slight leucocytosis, which disappeared with the disappearance of the hæmoptysis.

(4) In advanced cases of tuberculosis of the lung, there were normal numbers of white corpuscles if there was much fibrosis and little breaking down into cavities.

They draw the following conclusions:—

(a) If, in a tuberculous subject, in whom no chronic suppurative focus and no acute inflammatory focus exist, there is found a large increase of leucocytes, one may infer ulcerative process in the lung and the formation of cavity.

(b) If, in a tuberculous subject, where white blood-corpuscles have been counted from time to time and found normal, an increase is found at any time, it marks the beginning of destructive breakdown in the lung.

(c) If, in a tuberculous subject, a normal number of white blood-corpuscles is found, then in most cases the existence and formation of cavity of any large size may be excluded.

The cause of the leucocytosis is not the tubercle bacillus, but a secondary infection leading to breakdown of the substance of the lung—a septicæmic process due to the activity of various virulent bacteria and cocci.

The breakdown of the lung substance is the direct cause of the leucocytosis, as it leads to the taking up of pus elements and leucocytes into the lymph and blood stream.

Much of the matter here is obviously very contentious, and many more observations are needed before we can get anything like a fair basis of facts to start from. It is with the object of stimulating such further observations that this abstract is recorded here.

(e) Surgical treatment of pulmonary tuberculosis.

Stephen Paget very ably reviews the present possibilities of surgical help in pulmonary tuberculosis. Apart from empyema, which he discusses from every point of view, in very full detail, he treats of the following:—

(1) *Injections into lung tissue.*—The number of drugs that have been used is large; good results practically there are none. Actual harm has followed in not a few instances. It is impossible not to agree fully with his conclusion—"To expect to do much for phthisis with a few drops of antiseptic fluid, driven haphazard once or twice a week into a lung which we know to be tuberculous, but cannot know the exact extent and distribution of the disease, is surely to ignore the plain teaching of pathology."

(2) *Operation for pyo-pneumothorax with perforated lung.*—According to West's figures, 5 per cent. of deaths from pulmonary tuberculosis occur soon after the onset of pneumothorax. There is no doubt that in a fair proportion of cases, after the development of the pyo-pneumothorax which so commonly follows the entry of air into the pleura, the opening in the lung closes, and the situation resolves itself into that of empyema, and may be treated as such. A very drastic surgery has, however, proposed to seek for the opening in the lung and to suture it up. Paget records cases by Marchant of Paris and Delagenière of Mans in which this was attempted with partial success. "Certainly we must admire the skill and accuracy of these operations, but they still compel us to ask whether we may not hope, in such cases as these, to get equally good results by methods rather less severe. To suture one perforation in a tuberculous lung will not stop the formation of others; and West has found four and even six perforations in a single case. . . . And it does not appear to be absolutely necessary to suture the perforation; it may heal spontaneously, when the effusion has been let out and the cavity drained."

As soon as the opening has closed of itself, as it often does, the simpler treatment can show many instances of recovery.

(3) *Operation for the arrest of hæmorrhage.*—Paget points out

that neither the production of artificial pneumothorax nor the injection of hæmostatics into the bleeding lung is of any avail. He thinks that possibly in some cases venesection might be of use.

(4) *Resection of diseased portion of lung*.—The two successful cases of **D. Lowson** and **M. Tuffier** for a time gave rise to discussion as to the possibility of valuable surgical interference in early pulmonary tuberculosis. The number of disasters has, however, completely swamped the slight success. "The indications for the operation are so doubtful, the advantage of it so uncertain, and the proportion of deaths from it so large, that at present there is no clear reason why the surgeon should undertake it. . . . The disease in the early stage has not come to resection, and in its later stages has passed beyond the hope of benefit from it."

(5) *Incision of a tuberculous cavity*.—With a quaint accuracy Paget plunges into bygone history for his first successful case. "The earliest case is that of one Pheræus, who, having a cavity in his lung, and weary of life, put himself in the forefront of the battle, and received a spear-thrust which opened his cavity and restored his health. And, to obviate the natural difficulty of believing this, there is De Bligny's case (1679): The son of M. de la Genevraye, a gentleman of high estate, was the subject of phthisis, and all hope of his recovery had been abandoned. In 1670 he received a wound from a sword in his chest; the weapon entered near his right breast, between the fourth and fifth ribs, and passed into a cavity in his lung. There was an abundant purulent evacuation from the wound. After the accident he completely recovered of his disease."

The more modern cases given are not so encouraging. Of five quoted, one died fifteen days after the operation; two, one month after; but they all had very advanced tuberculosis.

The most satisfactory of the five, excluding the Hastings-Storks case, is the following: "A man with advanced phthisis was admitted to hospital with a large cavity in the left lung. It was incised, drained and sprayed through the drainage-tube; it became so nearly healed that the tube had to be first shortened and then left out, and neither pus nor air came from the wound; the physical signs improved, the tenderness on percussion disappeared, the lung contracted; and ten weeks after the operation he had so far gained strength and weight that he left the hospital and went back to work. Eight months later he returned with fresh extension of the disease, both lungs being now affected, and died a year and a quarter after the operation." In the account of the necropsy there is not that detailed description of the lung at the site of operation that one would desire.

The number of patients with tuberculous cavities who could conceivably be helped by such operation must always be very small, but from time to time suitable cases will arise.

(f) Food and exercise in pulmonary tuberculosis.

In the *Therap. Monatshefte* for July, 1896, Volland has a very interesting communication on the somewhat absurd excess to which overfeeding is being carried as a method of cure of pulmonary tuberculosis. Everyone must by now be familiar with the kind of *régime* he attacks: food at constant two-hourly intervals; glasses of milk forced on very unwilling patients, six to eight times a day; and large substantial meals. The underlying idea seems to be that if the patient can be induced to surround the food he will in some way be the better. Scarcely any account is taken of the fact that the digestive powers are limited, in some cases very limited, and that even if the patient keeps the food down, it is only so much useless matter of which he has to be rid. False inferences from the brilliant success of the Weir-Mitchell treatment in some thin neurasthenics have led to a vague notion that many thin consumptives might be benefited on the same lines. In a few cases this turns out to be true; but in a very large number it only increases discomfort. Dilatation of stomach, and the usual consequences of masses of half-digested food in the intestines, inevitably follow. Both quantitatively and qualitatively a consumptive patient should be fed as nearly as possible in the manner he was used to when in health, with this proviso: that the more digestible takes the place of the less digestible, as far as may be, and that the fancy be allowed large play. With rest and fresh air the desire for food and the power of digesting it increase *pari passu* in many cases, and then within limits a slight excess may be taken. As might be expected, many patients while taking large surplus of food continue steadily to lose in weight.

Volland also pleads for moderation in advising exercise as a cure for consumptive patients. In the vast majority of smouldering cases of pulmonary tuberculosis there is no doubt that only very limited exercise should be taken. Rest for the damaged lung as far as possible is as necessary as in the case of an injury anywhere else, and rest in abundance of fresh air. The method of strapping the diseased side so as to limit movement, quite apart from the presence of pleurisy, is again being used more freely. It is only where the mischief is quite quiescent, and fibrous tissue has largely replaced active tuberculous change, that anything approaching vigorous exercise is of value. Lung gymnastics where active tuberculisation is spreading can only lead to harm.

III.—DISEASES OF THE PLEURA.

There is little or nothing new to record of diseases of the pleura.

Hermann Eichhorst (in the *Schweizer Corresp. Blätter*, xxv., 13, 1895) has a paper "On the Relationship between Serous Pleural Effusion and Tuberculosis." He took some of the effusion in a large number of cases, and injected it with proper precautions into the peritoneal cavity of guinea-pigs. At first he used only very small quantities and got uncertain results. As soon as he began to use larger amounts, 15 c.cm., about two-thirds of the animals became tuberculous—that is, at least two-thirds of the pleural effusions were of tuberculous origin.

A. Aschoff, working in A. Fränkel's clinic, reports (in the *Zeit. f. klin. Med.*, xxix., p. 440, 1896) on 200 cases of serous pleural effusion. He tabulates his conclusions thus:—

1. So-called idiopathic serous effusions are almost all tuberculous. They may nevertheless be absorbed.

2. There is probably no such thing as a primary rheumatic pleural effusion. The pleural effusions that take place in acute arthritis are, almost without exception, in association with cardiac affections. Treatment with salicylic acid is not of much use.

3. The third point Aschoff raises is whether it is possible for pus-producing organisms to exist in small numbers in a pleural effusion without giving rise to pus. His answer is in the negative, with the one possible exception of the pneumococcus. The pneumococci die off so very rapidly.

The enormous preponderance of tuberculous cases in serous pleural effusion is generally recognised. In Great Britain the belief in the existence of a primary rheumatic pleurisy, especially in children, is held by very many. It is interesting to note that **Baccelli**, in *Il Policlinico*, June 15th, 1896, supports the view, and recommends the use of salicylate of soda in the early stages.

Albuminous or serous expectoration after paracentesis for serous effusion.

Samuel West, in describing a case of this kind (*Brit. Med. Journ.*, April 18, 1896), said it sometimes happened that during the paracentesis the patient began to cough and complain of shortness of breath, and soon afterwards to expectorate a quantity of clear, frothy fluid. The cough was constant, though not violent or paroxysmal, and with it was shortness of breath, and, occasionally, considerable dyspnoea. Wheezing and crepitation were heard over the lung, usually over the affected side only, but occasionally on both sides. After the symptoms had lasted for an hour or two, or a little longer, they usually subsided, but every now and

then the patient died of suffocation. Albuminous expectoration was one of the rarest events in pleuritic effusion. A man aged forty had had a right-sided effusion for three or four weeks. West performed paracentesis, using the siphon. The fluid flowed readily, and after about forty ounces had been withdrawn the patient began to cough. The cough increased in frequency and caused much distress. This was soon followed by a little dyspnœa. Expectoration commenced in ten minutes, and in an hour the patient brought up eight ounces. The attack lasted three hours, during which a pint of frothy fluid was coughed up. Over the right side (the side of effusion) there was much wheezing and crepitation, a little on the left. The patient made a good recovery. The cases of albuminous expectoration differed a good deal *inter se*. The attacks usually came on during paracentesis or immediately after it, sometimes as long as two hours. They lasted usually not more than an hour or two, but occasionally longer. The quantity of fluid varied from a few ounces to more than three pints. It was frothy, like that of acute bronchitis. It contained much mucin and little albumen. The physical signs were those of congestion of the lungs. There appeared to be no necessary relation between the duration of the pleurisy and the liability to serous expectoration, but as a rule the cases had lasted some little time. It was not to be connected with the use of the aspirator, for some of the cases occurred when the fluid was removed by the siphon only. The result was rarely fatal, and among the fatal cases some complication besides the effusion was generally found. The condition seemed less common than it used to be twenty or thirty years ago, probably because of the earlier performance of paracentesis. There were three explanations given of the phenomenon:—(1) Perforation of the lung during paracentesis, and the discharge of the pleural effusion through the lung; but the difference of the chemical characters of the two fluids showed that this explanation could not be correct. (2) The absorption of effusion by the lung. (3) Œdema of the lung, and this was the only satisfactory theory. In the non-fatal cases this œdema must be due to some transitory condition, and was probably in most cases connected with the sudden distension of the lung after it had been collapsed for some time. In the fatal cases some organic lesion was generally found in addition which would account for the result. In some of them the lesion was such as would cause obstruction either of the vessels of the lung or of the bronchial tubes, and possibly also of the lymphatics; in others there was disease of the opposite lung—for example, general pleural adhesion or morbus cordis. The

present instance was the only one which had come under West's observation out of a very large number of cases of pleural effusion.

It was agreed in the discussion that such cases are very rare.

Pulsating pleurisy.

Lépine (*Lyon Méd.*, February 23, 1896; *Brit. Med. Journ. Epit.*, 1896, i., p. 73) reports the following case:—A woman aged twenty-eight had all the signs of effusion filling up the whole of the left side of the thorax, which was dilated. In front dulness extended above the clavicle and across the sternum nearly to the right nipple line. The heart was situated on the right side. While exploring the left hypochondrium to ascertain the movements of the diaphragm, which were abolished on the left side, Lépine felt well-marked positive pulsations, synchronous with the cardiac beats, behind the left false ribs. As the heart was to the right of the sternum these must have been caused by the effusion. Aspiration was at once performed, and immediately after $1\frac{1}{4}$ litre of turbid fluid, containing some pus cells, had been drawn off, the pulsations ceased, as is the rule in these cases. The conditions necessary for a pleural effusion to transmit the cardiac pulsations are:—(1) The lung must be completely compressed; (2) the mediastinum must be rigid; (3) the diaphragm must have a certain tension; (4) probably other not well understood conditions, among which may be the presence of false membranes. Lépine believes that if pulsation were looked for carefully, it would be found more often than might be expected from the few cases published (less than sixty altogether).

Chronic right-sided pleurisy with constriction of the superior vena cava simulating intra-thoracic tumour.

Harrington Sainsbury records this very interesting case in the *Lancet*, November 30, 1895:—A woman aged sixty-two, admitted to the Royal Free Hospital with intense dyspnoea and cough, and great cyanosis. She had had winter cough for years, but had been much worse for six weeks. Two weeks before admission she had slight hæmoptysis. On examination, there was dilatation of the superficial veins on the right side of chest. Marked dulness over right side of chest. Heart's apex beat not displaced. Liver easily felt below costal margin.

On aspiration fifteen ounces of blood stained fluid were removed, without much relief. The patient died shortly afterwards.

At the necropsy no trace of tumour. The right pleural sac was converted into a cavity with thick, rigid, and almost cartilaginous walls. Both layers of the pleura were affected. The

right lung was pressed upwards, and was one-third to one-half the normal size. The superior vena cava was compressed so as only to be equal in size to a No. 5 catheter.

IV.—THE TREATMENT OF ABSCESS OF THE LUNG AND BRONCHIECTASIS.

Many abscesses of the lung are able to discharge their contents through the bronchial tubes and heal of themselves. A large proportion, however, do not do so. Since the French Surgical Congress of 1895, and M. Reclus's remarkable address on Pulmonary Surgery, increased attention has been paid to the surgical possibilities in such cases.

The "conclusions" of M. Reclus's address (wisely given by Mr. Paget in his book as Appendix A) are worth quoting in full :—

"(1) The surgery of the lung does not, as Glück said it did, follow the rule of general surgery : 'Ubi hæmorrhagia, ibi ligatura ; ubi tumor, ibi exstirpatio ; ubi pus, ibi incisio.' The structure of the lung and its air-passages, the part it plays in sustaining the life of the blood, its relations with the heart, and the presence of a pleural cavity, all forbid great expectations, and limit the power of the surgeon.

"(2) Resection, incomplete or complete, of a part of the chest-wall to reach a wound of the lung, and stop a mortal hæmorrhage, as a last chance, is doubtless an ultimate measure that we must recognise as justifiable ; but it is dangerous, and not yet sanctioned by experience.

"(3) Resection of tuberculous masses ought to be proscribed. If the disease be advanced or diffused the mutilation necessary for its removal would be beyond the patient's strength. If the infective nodule be circumscribed, general treatment will deal with it as efficiently as an operation, and without its risks.

"(4) Resection of a part of the lung for primary malignant disease is not even worth discussing. An accessible single circumscribed growth would be a clinical wonder that would evade our present power of observation. The utmost that the surgeon can do is, after the example of Krönlein, to follow even into the lung a sarcoma growing from the chest-wall ; but this will never be more than one of the brilliant exceptions of surgery.

"(5) With pulmonary cavities surgical intervention is more precise and more general. But incision for tuberculous cavities and for bronchial dilatations will very seldom be practised ; for these conditions are almost always diffuse. In every such case the operation is only palliative.

“(6) Hydatid cysts, on the contrary, and gangrene and abscess, can be vastly improved by incision. This is radical treatment in the true sense of the word, and many lives are saved by it. To speak too highly of incision in these cases is simply impossible, and the physicians who have the care of them ought never to forget the precious gifts offered to them by surgery.

“(7) The technique of the removal of lung tissue varies so widely with the character of the tumour submitted to operation that one cannot define the rules of it. But the details of the incision of the lung have been accurately settled—free incision of the soft parts, adequate resection of the ribs, operation in two stages, or thorough suture of the two layers of the pleura if they be not adherent, opening into the lung with the cautery at dull red heat, no irrigation, respectful avoidance of vessels whose rupture would cause hæmorrhage, drainage of the cavity with soft rubber tubes, and iodoform gauze.”

In the *Mittheilungen aus d. Grenzgebieten der Medicin u. Chirurgie* (I. i., p. 1, 1895) H. Quincke, of Kiel, reports a series of seventeen cases under his own care, and collects thirty-seven others reported since 1887.

	No. of Cases.	Died.	Cured.	No Result.	Imperfect Cure.	Position of Cavity.				
						Apex.	Middle	Base.	Right.	Left.
I. <i>a.</i> Acute simple abscess	7	1	6	—	—	1	—	6	3	4
<i>b.</i> Acute gangrenous abscess	13	6	7	—	—	1	1	11	8	5
II. <i>a.</i> Chronic simple abscess	8	2	1	1	4	—	—	8	2	6
<i>b.</i> Chronic putrid abscess	9	3	4	—	2	2	2	5	5	4
<i>c.</i> Putrid bronchiectasis	10	5	—	2	3	1	—	9	3	7
III. Putrid abscess secondary to foreign bodies	7	3	2	—	2	—	—	7	6	1
	54	20	20	3	11	5	3	46	27	27
		37%	37%	6%	20%					
Acute cases, I. <i>a</i> and <i>b</i> ...	20	7	13							
		35%	65%							
Chronic cases, II. <i>a</i> , <i>b</i> , } <i>c</i> , and III. ... }	34	13	7	3	11					
		38%	20%	9%	32%					

The figures are certainly too few to allow any permanent conclusions to be drawn from them. In the acute simple abscesses

it is possible that some would have recovered without surgical interference.

Taking the acute simple and gangrenous cases together, it is clear that a recovery of 65 per cent. means that the actual risks of the operation are worth facing, if the abscess does not appear likely to discharge itself successfully by the bronchi. In chronic cases the outlook is far worse. There are only 20 per cent. of recovery as compared with 65 per cent. in the acute cases. Still, if the abscess is definite and localised, an operation gives the best chance of cure.

Quinke maintains that certain pleural adhesions at the spot incised are a *necessary* preliminary.

Two successful cases of abscess of the lung treated by operation are recorded in the *Lancet* of August 22, 1896, by F. J. Smith and Treves, at the London Hospital. They are so important, and the points so well brought out, that they deserve careful attention.

“*Case 1.*—A man aged about fifty years was admitted to the hospital, under the care of Dr. F. J. Smith, with the following history:—Up to October, 1895, he was perfectly well—in fact, he boasted of never having had a day’s illness in his life. On October 12th, while at work, and in his usual health, he was suddenly seized with a severe pain in the right chest—he was cleaning a window, and noticed that his right arm seemed at the same time to get weak. He went home and rested, and some three or four days later he perceived that his breath had become very offensive, and a cough developed at the same time with very foetid expectoration; the very foul smell made him feel sick, but otherwise, either then or since, he has complained of nothing in the way of special symptoms. Inspection, palpation, and auscultation revealed absolutely no pathological sign anywhere; and on percussion it was difficult to believe that the slight dulness of note opposite the middle of the right scapula was really of any import. Dr. Smith accordingly ordered the inhalation of a few drops of the following mixture several times a day—viz., 1 drachm of creasote, 2 drachms of carbolic acid, 3 drachms of tincture of iodine, and rectified spirit of wine to 1 ounce. The foetor improved at first, and the patient experienced considerable relief, but in two or three weeks it was as bad as ever, and he began to feel ill with the horrible smell. Dr. Smith saw him again, and admitted him on December 12th, and repeatedly examined the chest. The following were the physical signs revealed by a systematic examination. By inspection the result was *nil*. On palpation, by persistent digging in of the finger, Dr. Smith was

able to find a spot about the size of half a crown between the border of the right scapula and the vertebral spines opposite the middle of the scapula, where pressure caused slight pain, or at least a different sensation from that experienced when a similar manœuvre was practised on the other side. This spot was that at which the patient had originally complained of pain passing from the front of the chest. On percussion, slight dulness was detected over the same area, but this was appreciable only on repeated trials. On auscultation there were heard distant breath-sounds, which were less audible and yet more distinct than on the other side; the voice sounds were similarly affected, but nothing was noted that could be called bronchophony or pectoriloquy, and there were no adventitious sounds; in fact, the chief point was a comparative absence of natural sounds. On December 16th the house physician passed in a grooved needle, but failed to reach either pus or fœtid material. The patient was quite willing to undergo any operation that offered a chance of relief from his most unpleasant symptoms, and accordingly Mr. Treves was asked to cut down on the spot and let out the pus. Dr. Smith's diagnosis was exactly verified at the operation; a very localised pleuritic adhesion was found at the spot indicated, with a small abscess cavity beneath it, about the size of a walnut, containing most offensive pus. The patient did remarkably well for some months, the fœtor disappearing, and the patient feeling well. A return of the trouble necessitated, however, a second operation at the old site, and since then the patient has made an uninterrupted recovery, and is now back at his old work. The surgical procedure and treatment are dealt with in the remarks by Mr. Treves, and also the second operation which took place in February, 1896.

“Case 2.—A man aged forty-five years was admitted to hospital, under the care of Dr. Smith, on May 14, 1896. His history was as follows:—About three weeks after Christmas, 1895, he had what seemed to be rheumatism, and in a short time noticed that he had lost his taste, while his wife complained of the foul smell of his breath. He had a slight cough, but otherwise complained of nothing; there was no pain or tenderness, and only slight shortness of breath; he lost flesh, however, rather rapidly. From then till his admission he seemed steadily to lose ground from the fœtor and consequent *malaise*, and it was feared that malignant disease was at the bottom of the trouble. On admission, Dr. Smith observed the following physical signs in the chest. Inspection revealed nothing; on palpation there was diminished tactile vocal fremitus all over; on percussion there were noted slight comparative dulness and

increased resistance to the finger in the right axilla and posteriorly about the inferior angle of the right scapula (Dr. Smith termed it a "woodeny note" over this area); the left side seemed to be natural in note. Auscultation revealed that throughout the right lung behind, the breath sounds were harsher than on the left side, and more clearly conducted to the ear, but nowhere distinctly tubular; at the lower part of the scapular region and just below its angle these harsh sounds were associated with rather fine moist crepitations, which were not heard on the left side, and expiration became almost tubular in character. In front a similar distinction was to be made out between the two lungs, but it seemed as though the right abnormal sounds were transmitted through healthy lung, indicating that the mischief lay posteriorly. Mr. Treves was asked to operate. The operation is described below. The patient has regained the flesh he had lost, and his breath is free from odour. He is now (August, 1896) out of hospital and quite well.

Remarks by Mr. Treves.—The surgical procedure adopted in the above-mentioned cases was the following:—A large triangular-shaped flap, with the base uppermost, was fashioned from the soft parts over the site of the lesion in the lung. The exposed portions of the ribs laid bare were removed subperiosteally, and the intercostal tissues and the pleura were divided. In Case 1 the parietal and visceral layers of the pleura were adherent; an incision was made directly into the lung beneath, and exceedingly offensive pus at once let out. The incision into the lung was enlarged until the abscess cavity was well exposed. Its walls were then scraped and dried, and the whole infected space stuffed with iodoform gauze. An opening was made in the centre of the integumentary flap, and through this the end of the gauze plug was drawn. The pleural cavity below was made evident during the operation; the bleeding was trifling and very easily controlled. The flap was fixed in position by sutures, and the abscess cavity, irrigated daily, was dried out and then stuffed with gauze through the hole made in the flap. The after-treatment presented no difficulty of any kind, and healing was speedy and uninterrupted. There was some return of the pulmonary symptoms, and at Dr. Smith's request I again exposed the affected part of the lung. I discovered the old abscess cavity to be entirely obliterated. The healing was sound, and there was no trace of either pus or granulation tissue. In Case 2 I exposed the pleura by turning up a like flap of the soft parts. As in both instances, the operation was carried out in the gap between the scapula and the spine; the flaps in these cases were

very substantial. In the present instance I found the pleura much thickened, but I then plugged it at the margin of the wound with a tampon of iodoform gauze in such a way that a circular patch only of the lung was left exposed. It was freely divided. I introduced a trocar into the exposed lung thus isolated as to its surface. No pus escaped. I then proceeded to incise the lung, and although the incision was ultimately carried for more than one inch in depth through apparently healthy lung tissue, the bleeding was comparatively insignificant. I finally reached the abscess cavity, which was the size of a cricket ball. A free opening was made down to it through the lung, and the actual section of lung tissue made when the operation was completed was quite considerable. The abscess cavity was scraped, dried, and very firmly stuffed with iodoform gauze. There was no trouble from bleeding, which was at once arrested by the plug. The tampon was removed from the pleural cavity, and the flap adjusted as before. No attempt was made to shut off the pleural cavity by sutures. With efficient gauze drainage of the suppurating area, such exclusion is unnecessary. The lung cavity was plugged daily. The original plug was left undisturbed for four days. This case healed even more readily than the first. It is evident that lung abscesses—or, rather, certain lung abscesses—can be treated in precisely the same manner as are suppurative collections in more accessible parts, and that an extensive incision can be made in the periphery of the lung without trouble from hæmorrhage.

Remarks by Dr. Smith.—"Both the cases presented the same fundamental symptoms—namely, excessive fœtor of breath, from which, and its consequences, they urgently desired relief. This symptom may be caused, firstly, by disease in the alimentary tract, but neither patient gave any grounds to suspect this source. Secondly, by trouble in the lungs and air-passages, and it was evident in both cases that the mischief lay here. The conditions of the respiratory organs likely to cause it may be enumerated as:—(1) Malignant ulceration of the larynx; (2) spreading gangrene of the lungs; (3) stinking empyema which has burst into a bronchus; (4) bronchiectasis; and (5) local necrosis with suppuration or abscess of the lung. (1) There was no evidence of this; (2) this could be excluded by the comparatively healthy appearance of the patient taken in conjunction with the duration of the illness, which was far too long not to have produced much more profound cachexia had spreading gangrene been present; (3) excluded by the absence of the ordinary signs of pleural effusion, as well as of those of pneumo-

thorax ; (4) bronchiectasis is, I suppose, the commonest cause of foetid expectoration, but to get that there must, I think, be a history of some previous disease of the lung, possibly pneumonia, but, of course, more probably chronic bronchitis. Now, all such indications were conspicuous by their absence, and I was thus easily led to believe that I had a single source of foetor to deal with, and not multiple bronchiectases."

V.—THE TREATMENT OF BRONCHIECTASIS.

Neither Quincke nor Reclus has anything to say in favour of operative interference in diffuse bronchiectasis. Indeed, the appearance of such a lung at a *post mortem* examination, with its endless small cavities and dilatations of tubes, often of astonishingly small calibre compared with the large amount of sputa coughed up during life, shows at once how hopeless any attempt at drainage would prove. Of Quincke's ten cases, five died, in two there was no improvement, in three very doubtful improvement.

Further experience of Arnold Chaplin's creasote vapour bath confirms the good reports previously received. It fails, of course, in many cases, but it often markedly lessens foetor, reduces quantity of expectoration, and lowers temperature, and the patient gains strength and weight. **C. Brian Dobell** reports a case under his care, at the Tewkesbury Hospital, in the *Brit. Med. Journ.*, June 20, 1896. The patient, a man of forty, was a typical case of bronchiectasis, exceedingly emaciated, height 5 feet 10½ inches, and weight only 7 stone 8 lbs. After trying other remedies without success, the creasote bath was begun. At first he was allowed to stay in it only for ten minutes, but this was quickly increased to one hour a day. The temperature fell almost at once, he began to gain weight, the foetor diminished, and appetite improved. For three weeks the baths were given regularly every day, and in the fourth week only two were given; the patient then left hospital. He had gained over a stone in weight during the creasote-bath treatment. He continued to improve, and six weeks after leaving hospital his weight had risen to 10 stone 5 lbs., and he was hard at work.

Such a thorough success as this is exceptional, but improvement and large improvement follows in so many cases that the treatment merits extended use. The creasote bath has proved of no real value in pulmonary tuberculosis.

In order to lessen foetor, in addition to the drugs usually employed, **Hector Mackenzie** recommends, in the October number of

the *Practitioner*, the use of garlic. It may be given to children as the syrupus allii of the United States Pharmacopœia—a drachm of the syrup mixed with a drachm of syrup of tolu, three times a day. To adults it may be given either as the syrup, in 2- to 4-drachm doses, or 2 or 3 grains of powdered garlic may be given in a cachet. The treatment had previously been advocated in similar cases by **Vivian Poore**.

THE TREATMENT OF NERVOUS AND MENTAL DISEASES.

BY ERNEST SEPTIMUS REYNOLDS, M.D. LOND., F.R.C.P.,

Senior Physician to the Ancoats Hospital, Manchester; Physician to the Manchester Workhouse Infirmary and Lunary Wards.

THIS article includes the following subjects :—

- I.—Lumbar Puncture.
- II.—The Use of Animal Extracts in Insanity.
- III.—Hypnotics.
- IV.—The Treatment of Epilepsy.
- V.—The Treatment of Tetanus.
- VI.—Other Articles on Insanity.
- VII.—Miscellanea, including Sciatica, Neuralgia, Tabes Dorsalis, etc.

I.—LUMBAR PUNCTURE.

Puncture of the spinal meninges in the lumbar region by an exploring needle was proposed by **Quincke** in 1891 as a method of diagnosis and treatment of certain affections of the brain, and especially of the cerebro-spinal meninges. **Quincke** (*Berlin. klin. Woch.*, October 14, 1895) based his method on the fact that cerebro-spinal fluid can distend the dural sac down to the sacral canal, and can be drawn off in the lumbar region by an exploring needle. The pressure of the fluid can be ascertained at the same time as the puncture is made by attaching an indiarubber and glass tube to the cannula, and noting the height to which the fluid rises in the elevated part of the tube. An instrument has been specially devised for this purpose by Assmann, of Kiel.

A needle, about 8 to 10 cm. in length, is used and the puncture is made in the third, or better, the fourth, lumbar space; in children, the puncture is made in the middle line and the needle directed at right angles to the surface; in adults, however, the spot chosen should be about 5 to 10 mm. on one side of the

spinous process, the patient lying on the opposite side, with the legs drawn up, and the needle should be directed slightly upwards. Some operators prefer the sitting position with the patient leaning forwards. The local pain is slight, and as a rule the operation is easy, and no anæsthetic is required, though some, as **Goldscheider** (*Berlin. klin. Woch.*, April 1 and 8, 1895), have met with difficulties in its performance in adults; and if the rigidity of the spinal muscles is considerable, an anæsthetic may be necessary. In a few cases **Quincke** noticed pain and a spastic stretching of one leg, but this passed off in twenty-four hours. As the point of selection is below the termination of the cord (which only reaches to the second lumbar vertebra in adults, and the third lumbar vertebra in children), no damage can be done to this structure, and the cauda equina has apparently never been injured.

The normal cerebro-spinal fluid has a specific gravity of 1,007, and contains about .2 to .5 per 1,000 of albumen and a little sugar. The normal pressure of the fluid is equal to 40—60 mm. of water, therefore during puncture the flow must be stopped when the pressure has decreased to 50 mm. **G. W. Jacoby** (*New York Med. Journal*, December 28, 1895, and January 4, 1896) has proved by experiments on the dog that there is a free communication between the cerebral and spinal sub-arachnoid spaces and between the brain ventricles and these spaces. He also noticed that after repeated lumbar puncture there was a considerable increase in the amount of albumen in the fluid withdrawn.

Pathologically, **Quincke** found that in cerebral tumour, hydrocephalus, and various forms of meningitis, the pressure is increased and may amount to 200, 300, or even to 700 mm. of water; increased pressure is present in meningitis, and especially in cerebral tumour. Moderately increased pressure with severe symptoms points to an acute affection, whereas greatly increased pressure with slight pressure symptoms points to a chronic one. As regards the quality of the fluid, it is mostly clear, but may be turbid from the presence of leucocytes, or discoloured by blood. The amount of albumen present is increased in acute inflammatory affections up to 1 to 3 per 1,000, and in cerebral tumours up to 7 per 1,000. Sugar is absent in inflammatory conditions. In cerebral hæmorrhages into the ventricles the fluid is often blood-stained. According to **Freyhan** (*Berl. klin. Woch.*, April 1st and 8th, 1895), the fluid may be blood-stained from the puncture of a spinal vein, from hæmatoma of the dura mater, or from a cortical hæmorrhage bursting into the meninges, but in none of these cases is the blood so abundant as after hæmorrhage into the

ventricles. Freyhan also states that in tuberculous meningitis the albumen is never less than 1 per 1,000, and that in tumour it is generally less than in meningitis.

Rieken (*Deut. Arch. f. klin. Med.*, Bd. lvi. 1895) says that the pressure is different in different diseases. The greatest pressure was found in tuberculous meningitis, then in chronic hydrocephalus. The fluid removed was serous, occasionally slightly bloody, and seldom contained other elements. He found the amount of albumen greatest in tuberculous cases and in some brain tumours. He says that occasionally several punctures may have to be made before fluid is found.

Lichtheim (*Berl. klin. Woch.*, April 1st, 1895) attaches great importance to the diagnostic value of the proceeding. He found that in cases of cerebral tumour the fluid contained less albumen than in cases of basal meningitis—·8 per 1,000 compared with 1 to 1·6 per 1,000; that in the latter cases the fluid more often clotted; and whereas the fluid usually contained sugar in the former cases, it was only found as an exception in tuberculous meningitis.

Micro-organisms have been found by many observers in the fluid withdrawn. Most commonly tubercle bacilli were found in cases of tuberculous meningitis. Thus **Jacoby** found them in eleven out of seventeen cases of tuberculous meningitis, **Lichtheim** in four out of six, and **Fürbringer** (*Berlin. klin. Woch.*, No. 13, 1895) in twenty-seven out of thirty-seven cases in which the diagnosis was confirmed by an autopsy. Lichtheim found streptococci in two cases of purulent meningitis, and others have found diplococci in cases of epidemic cerebro-spinal meningitis. Fürbringer reports four tuberculous cases without meningitic symptoms in which no tubercles were found in the fluid withdrawn, and no tuberculous meningitis was found at the autopsy. In three children with meningitis no tubercle bacilli were found, and *post mortem* it was shown that they were suffering from simple serous meningitis.

Stadelmann (*Berlin. klin. Woch.*, July 8, 1895) says that in tuberculous meningitis the fluid should be clear and should contain tubercle bacilli; in suppurative meningitis, turbid or purulent, with pyogenic micro-organisms; and in cerebral abscess and cerebral tumour, clear and not containing micro-organisms. But even in simple meningitis, suppurative meningitis and tuberculous meningitis, clear fluid without micro-organisms has been drawn off, thus lessening the diagnostic value of the method.

Quincke sums up the diagnostic value of lumbar puncture by saying that "by this means we gain a knowledge of the kind and extent of the inflammatory processes in the meninges, of the

presence of micro-organisms, and of the relation of the brain symptoms to the increased pressure."

Therapeutic effects of lumbar puncture.—Unfortunately no very great benefit as regards cure or relief of symptoms has been noticed. In some cases, however, withdrawal of the fluid has lessened the amount of distension of the cerebral ventricles, and a remission of symptoms was noted after or during the operation. Some good effects were seen in serous and sero-purulent meningitis. In some cases there is an immediate lessening of the brain symptoms after the puncture, but this was less marked in chronic than in acute cases. If danger to life is imminent from increased pressure, then lumbar puncture may be of service. In some cases **Quincke** incised the meninges so that the fluid might slowly drain away, as generally after puncture the high pressure is soon re-established. **Jacoby** noticed a diminution of the pain in brain tumour after puncture, which lasted for some days, although for about a quarter of an hour after the operation the pain was sometimes worse. He also noticed in meningitis that there was an improvement in the frequency and quality of the pulse and a transitory clearing of the intellect; no improvement was seen in the "choked disc" of brain tumour. He throws out the suggestion that by combined trephining of the skull and lumbar puncture it might be possible to wash out the whole of the sub-arachnoid space and the ventricles in cases of tuberculous meningitis; and **Goldscheider**, in a case of compression myelitis without increase of fluid, tried to lessen the painful contractures by injecting cocaine solution in the spinal arachnoid, but without success. **Heubner** (*Berl. klin. Woch.*, Nos. 13 and 14, 1895) says that in tuberculous meningitis the puncture caused the headache, convulsions and vomiting to cease; and **Senator** (*Berl. klin. Woch.*, No. 13, 1895) reports that it causes an amelioration of the symptoms in chronic hydrocephalus, and relieves symptoms and prolongs life in tuberculous meningitis. **Lenhartz** (*Münch. med. Woch.*, Nos. 8 and 9, 1896) recommends the method in chronic serous meningitis in severe chlorosis accompanied by intense headache, and in acute oedema of the brain following injury of the head.

But other observers have noticed no good effects from lumbar puncture. Thus **Lichtheim** in 1893 expressed doubt as to its curative value, and said that in none of his cases, including cerebral tumours and tuberculous and purulent meningitis, did he notice any relief of the symptoms of compression of the brain, although he withdrew up to 80 c.cm. of fluid. **Fürbringer**, **Picard** (*Neurolog. Centralb.*, p. 136, 1896), and **Gaibissi** (*Gazz. degli*

Osped., February 22, 1896) also saw no relief of symptoms by the operation.

Objections to the method and its bad effects.—As might be expected, many objections have been raised to lumbar puncture, not only to its use as a means of diagnosis, but also because of its dangers. Thus **Fürbringer** (*Deut. med. Woch.*, No. 45, 1895) points out that no fluid may be found even in tuberculous meningitis, because no fluid is present, and mentions a case in which the diagnosis was uncertain between tuberculous and purulent meningitis, and in which puncture was performed fourteen times without result. At the *post-mortem* examination no fluid was found to be present, but the whole base of the brain membranes was a jelly-like œdematous mass with many miliary tubercles. Again, **Stadelmann** states that the diagnostic value of the method is a qualified one. Only a positive result is of value, for even if no bacilli are found, the case may yet be one of tuberculous meningitis. If a distinction is wished between purulent meningitis and brain abscess, then a flow of pus indicates purulent meningitis, but clear fluid leaves the diagnosis doubtful. He points out that the operation may be dangerous by leading to an extension to the spinal membranes of an inflammation which up till then had been limited to the cerebral meninges.

Rieken noticed headache many times, and once a painful extension of the right leg after the puncture; as a rule, however, most observers state that they have seen no bad after-effects.

Unfortunately several deaths are reported to have occurred soon after the puncture was made. Thus **Bull** (*Neurolog. Centralbl.*, p. 759, 1896) had one patient who died three-quarters of an hour after the operation, and in another case the tapping had to be stopped because the patient became restless and cyanotic, and died the next day. **Fürbringer** (*Centralb. f. innere Med.*, January 4, 1896), in reporting his results in eighty-six cases, mentions four in which the consequences were fatal. In a later communication he mentions another fatal case in a young man suffering from cerebellar tumour who died the day after the puncture was performed. He refers to a case of Lichtheim's also suffering from cerebellar tumour with death the following day. As regards the cause of death, Fürbringer does not agree with the theory of aspiration put forward by Quinke, but rather favours the idea of Stadelmann that a pathological narrowing or closure of the foramen of Majendie will not allow the rapid emptying of the fluid within the ventricles, and as a result, the brain is pressed against the dura mater at the base.

He thinks that lumbar puncture is dangerous in cases of brain tumour, especially if these are situated in the cerebellum.

Various observations.—**Quincke** used the method in fifty-three cases, chiefly when the pressure was increased, such as in brain tumour, hydrocephalus, and various forms of meningitis, serous, purulent and tuberculous. The amount of fluid removed in these cases varied from 3 to 60 c.cm., on the average being about 20 c.cm.

Rieken reports thirty-four cases : seven were simple meningitis, six were tuberculous meningitis, fifteen chronic hydrocephalus and chronic serous meningitis, and six were other diseases. The amount of fluid removed varied from 3 to 33 c.cm. In chronic hydrocephalus the pressure diminished very rapidly, so that only a little fluid was removed.

Lenhartz says that in pathological conditions the amount of albumen may reach as high as nine per 1,000. In twelve out of fourteen cases of tuberculous meningitis fluid was present, and in three of these cases there was a transitory improvement after puncture. In chronic serous meningitis cure occurred in one case, and improvement in two.

Tobiesen (*Neurolog. Centralb.*, August 15, 1896) says that in two of his cases no tubercle bacilli were found microscopically, but that by inoculation experiments their presence was demonstrated.

Lumbar puncture in general paralysis of the insane.—In an elaborate paper **Turner** (*Brit. Med. Journ.*, May 2, 1896) has given the results of his experiments in general paralytics. He was led to use the method by the statements of Batty Tuke and Claye Shaw, who expressed the opinion that the excess of fluid in the sub-arachnoid space of general paralytics was due to chronic inflammation, and was at a high pressure, and was not merely compensatory from shrinking of the brain substance. These observers also recommended that in general paralysis the skull should be trephined and the fluid drained away in order to relieve the symptoms. Subsequent experiments and operations have clearly shown that the trephining was of no ultimate service, and also that the theory on which it was based was incorrect.

Turner performed lumbar puncture in fourteen cases, but no appreciable amelioration of the patient, either mental or bodily, resulted. The pressure of the fluid was examined, and was found not to be higher than that likely to belong to the blood ; the nature of the fluid, at least as regards its proteid constituents, did not differ from cerebro-spinal fluid, and had none of the

characteristics of a fluid due to inflammatory exudation. These results are quite at variance with the theory put forward by Batty Tuke and Claye Shaw, and are in favour of the much more probable view that the excess of fluid is merely compensatory.

II.—THE USE OF ANIMAL EXTRACTS IN INSANITY.

1. **Thyroid extract.**

The wonderful mental changes which are brought about in cases of myxœdema when treated by thyroid extract have, as might have been expected, led to a trial of the same remedy in various cases of insanity, whether associated with disease of the thyroid or not. Thus **Bruce** (*Journ. Ment. Science*, January, 1895, p. 50) was induced to try the drug on reading the accounts of myxœdema treated by the extract, in which occasionally the temperature was raised from sub-normal to normal or above normal, with a quickened pulse rate. Bearing in mind the slow pulse and low temperature so often seen in the insane, he thought that thyroid extract might improve both the mental and the bodily condition in these cases. The cases treated comprised mania, melancholia, general paralysis, syphilitic insanity, alcoholic amnesia, and puerperal, lactational and climacteric insanity. The drug was administered in large doses until a feverish condition was induced for two or three days. Frequent examinations of the pulse were made to avoid accidents, and iron was administered at the same time to avoid any bad effect on the blood. Two men out of eight recovered, three were relieved, and three were not improved; thirteen out of fifteen women were improved and two were unaffected. Bruce thinks that the drug should be given in all cases in which a certain amount of recovery has taken place, but in which a stationary period seems to have set in; but he believes it to be contra-indicated where acute excitement is present with rapid loss of weight and mal-assimilation of food.

In a second paper **Bruce** (*ibid.*, October, 1895, p. 636) published a further series of sixty cases treated with thyroid extract, but most of them were unfavourable. He had, notwithstanding, most gratifying results in the shape of recoveries when patients threatened to pass into a chronic condition.

In the discussion on this subject at the British Medical Association, Bruce said that he regarded thyroid extract as useful in anergic stupor, as a diagnostic between stupor and dementia, and also as an agent in prognosis, as he had never seen a case recover which had not shown some improvement with thyroid treatment. In the same discussion **Farquharson** (*Brit. Med. Journ.*,

September 26, 1896, p. 800) mentioned thirteen cases treated with thyroid extract, five being cases of mania, seven of melancholia, and one of slight dementia. The treatment was continued on an average for eight days, very large doses of the extract being given ; and symptoms of overdosage, such as high temperature, rapid, irregular, feeble pulse, loss of weight, nausea and vomiting, were produced. During treatment, patients who had previously been dull became bright and talkative, but others seemed depressed and emotional, and others again excited. Several cases showed no change whatever. The mental changes noted during treatment were, however, not maintained, and there was no permanent improvement in any case three weeks after the treatment had been discontinued. Thus the results on the whole were not satisfactory.

Brush (*Journ. Nerv. and Mental Dis.*, April, 1896, p. 257) mentions several cases of insanity treated by thyroid extract with improvement. Amongst these were cases of chronic delusions of doubt and fear somewhat improved ; chronic delusional insanity with violence much improved ; simple melancholia of several months' duration recovered ; and a case of recurrent mania with rapid lessening of the excitement. Two cases of chronic melancholia in men were not improved.

Reinhold (*Münch. med. Woch.*, December 24, 1895) used thyroid treatment in twelve cases of insanity in which there was enlargement of the thyroid gland ; only cases of parenchymatous thyroiditis were thus treated, cystic goitres being excluded. The patients were young subjects, and the mental symptoms included mania, melancholia and dementia. Thyroid tabloids were used, and the treatment was continued for six weeks. In every case the thyroid gland diminishes in size, and most of the patients showed loss of weight, but four patients actually gained weight. As regards the mental condition, the majority remained quite the same, but one case was cured, one was improved, and one became worse.

2. Other animal extracts in insanity.

We have seen from the above that although but little value has as yet been found in the use of thyroid extract in insanity, yet it is a reasonable method of treatment, as undoubtedly the gland secretes a something which is absorbed into the circulation and has a far-reaching effect on the whole animal economy. When, however, we come to consider the use of extracts of other organs we cannot see any *à priori* reason why they should be of service ; for they are derived either from organs such as the brain, cord or ovary, which do not secrete anything, or from organs, such as the testicle or epididymis, whose secretions have already a perfectly

definite object. We are thus not surprised to find that none of the experiments with these extracts have led to any good result. Thus **Bruce** (*ibid.*, October, 1895, p. 636) has tried cerebrin, ovarian and epididymin tabloids, and **Robertson** (*Brit. Med. Journ.*, September 26, 1896, p. 800) has used spermatic extract, but without effect. The latter author, however, says that myelin and cerebrinin perhaps act as stimulants to nervous tissue, and may be found useful in slight forms of mental disease and neurasthenia.

Thyroid extract has been used by **Bruns** (*Neurol. Centralbl.*, December, 1895) in the treatment of acromegaly. He found that the enlargement of the parts continued, but that the improvement in subjective symptoms was striking. The nervous irritability rapidly diminished, the patients slept well, headache disappeared, and the pains in the extremities were lessened.

Thomson (*Arch. Pediatrics*, March, 1896) tried thyroid extract in tetany, but without result.

III.—HYPNOTICS.

In former years a large part of this article has been taken up with the consideration of new hypnotics, many of which were merely kept before the profession by enterprising firms of manufacturing chemists, as either from their feeble action or their poisonous after-effects they had no merits of their own. In this way we have seen come and go such drugs as urethane, somnal, hypnal, uralium, amylene hydrate, and methylal. During the past year only one new hypnotic has appeared under the name of Pellotin. It is a vegetable alkaloid derived from a variety of cactus, and has been reported upon by **Jolly** (*Deut. med. Woch.*, June 11, 1896), who found that it first caused drowsiness in frogs and mammals, and afterwards increased reflexes and tetanus. He tried it in forty cases, administered both by the mouth and subcutaneously. These were mostly cases of severe pain, such as occurs in locomotor ataxia and in peripheral neuritis; the pains of tabes returned when the effects of the drug passed off. He found the drug useful in mental excitement, and especially in alcoholic delirium. The action of $\frac{1}{3}$ grain was slight, but $\frac{7}{10}$ to 1 grain produced a hypnotic effect. One grain had much the same action as 15 grains of trional or 20 to 30 grains of chloral. A few patients complained of noises in the head or vertigo, but there were no other unpleasant symptoms.

Of the older hypnotics, those which have best stood the test

of time are opium and its derivatives, chloral, chloralamide, trional, paraldehyde, and sulphonal. Each of these has its special uses and each its special dangers. When pain is present, or when insomnia is due to cough or to heart disease, then morphine can hardly be excelled. In the insomnia of old people, either from mental excitement or from cyanotic conditions, paraldehyde is excellent, and so far as we have seen is perfectly safe, but its nauseous taste makes it a trial to take in such large doses as one drachm (as is often required). For many forms of insomnia chloral (or, if the heart is weak, chloralamide) is the best hypnotic, and, as we have before stated, the fear which many practitioners have of giving the drug is unfounded, for if given with alcohol, in reasonable doses and suitable cases, no bad results will follow. Of course, care must be taken that a chloral habit is not induced, but this warning applies equally to all hypnotics. In trional and sulphonal we have two remedies of much use in simple insomnia; but in both cases great care must be taken, for, as will be seen, they are much more prone to produce dangerous symptoms than was at first supposed.

1. Poisonous effects of trional and sulphonal.

Breslauer and Joachim (*Centralb. f. d. gesamt. Therap.*, Aug., 1895) point out that the action of *sulphonal* is slow, and from its comparative insolubility, sleepiness rather than sleep is produced; after long use, vomiting and constipation, ataxia of the lower limbs with paralysis and muscular spasms, anuria, ischuria, and hæmatoporphyrinuria have been observed. In order to avoid these bad results the drug should never be given for more than three days in succession, nor in doses exceeding 30 grains per day, and the bowels and kidneys should be carefully regulated. They found that *trional* acts well in neurasthenic insomnia and in chronic and periodic mania; good results were also obtained in melancholia, and hallucinations accompanied by violence, even $7\frac{1}{2}$ grains having a sedative effect. But experiments on animals have shown that poisoning may occur just as with sulphonal, and fatal cases have been recorded in men. Its action is cumulative, and is delayed from fifteen minutes to three hours. After continued administration the following symptoms were noticed:—Dulness, giddiness, headache, anorexia, constipation, ataxia, and sometimes oliguria or even strangury. Hæmatoporphyrinuria and even death may occur. The precautions to be observed are:—Trional should never be given continuously in larger doses than 15 to 30 grains, and it should be given in a large quantity of warm fluid, in which it is soluble. After administration for four or five consecutive days, an interval of

several days must be allowed. The patient should take some natural alkaline mineral water when using the drug, and constipation must be corrected. If hæmatoporphyrinuria comes on, the drug must be discontinued at once, diuresis and free evacuation of the bowels procured, and the blood should be neutralised with 60 to 90 grains of bicarbonate of soda per day. The authors say that tetronal has all the disadvantages of sulphonal without its power, its action being more sedative than hypnotic.

Berger (*Münch. med. Woch.*, Oct. 1, 1895) reports the case of a man who, as a result of taking 60 grains of trional in twenty-four hours, was somnolent, had hallucinations, and could not speak distinctly; the breathing was stertorous, the extremities cold and blue, and there was ataxia in the legs and hands. Strong coffee, camphor, and carbon dioxide water were given; but next day the symptoms persisted, anorexia was marked, and the urine was burgundy red in colour, but clear and transparent. Recovery slowly ensued, but the urine was not normal for sixteen days.

Beyer (*Deut. med. Woch.*, No. 1, 1896) states that only six cases of trional poisoning have been recorded, one of these being probably a case of chronic poisoning. He thinks the drug should be given only in a single evening dose, and that a smaller quantity is efficient in women than in men.

Reinicke (*Die Therap. der Gegenwart*, June, 1895) reports a case of chronic trional poisoning, which came on in spite of precautions; from time to time the drug was discontinued, the diet was regulated, and the action of the bowels and kidneys closely watched. In all, the patient took 600 grains of trional in 107 days. Suddenly she complained of headache and drowsiness, and two days later (although the drug had been stopped) nausea and watery, bloody diarrhœa came on; four days later the urine was blood-stained, and contained hyaline and granular casts.

Scognamiglio (*Brit. Med. Journ. Epit.*, March 21, 1896) says that as a result of experiments on animals and observations in man he thinks the danger of hæmatoporphyrinuria after trional is much exaggerated.

2. Insomnia due to pain.

As a rule, the only drugs which will relieve insomnia due to pain are those which first ease the pain, such as opium, antipyrin, or phenacetin. In addition to these, Spitzer (*Wiener klin. Woch.*, No. 23, 1895) recommends *trional*, which was a success in nineteen cases out of twenty-five. The successful cases included lumbago, intercostal neuralgia, carcinoma uteri, chronic

bronchitis, emphysema, mitral stenosis, fatty heart, pulmonary and laryngeal tuberculosis; sciatica, myelitis, and tabes dorsalis. He said that trional is a good hypnotic in lung and heart cases. In a few instances gastric disturbances came on, and sometimes vomiting on waking. **Boudeau** (*Brit. Med. Journ. Epit.*, Oct. 5, 1895) also reports good results in insomnia due to pain; and **Wolfe** (*ibid.*) recommends it in neuralgic and myalgic affections, and also in chorea. **Moncorvo** (*Bull. de l'Acad. de Méd.*, Sept. 3, 1895) did not find it so useful in painful affection, but says it is good in tuberculosis, and is on the whole the most useful hypnotic for children.

IV.—THE TREATMENT OF EPILEPSY.

There still seems to be no remedy for epilepsy which can approach the bromides in efficacy. All other proposed methods of drug treatment have had but a short life, and every new method has merely been some modification of the bromide treatment. It is only by a carefully regulated diet (containing a small proportion of animal food), by a careful attention to the bodily functions, by a life as free from worry and as much in the fresh air as possible, and by a judicious use of the bromides, that we can hope to lessen the distressing features of this malady. The establishment of the epileptic colony at Chalfont St. Peter, where patients are employed in agricultural pursuits, is a great step in the right direction, and it is to be hoped that similar colonies may be set up in various parts of the country, in order that some profitable occupation may be found for the large number of sane epileptics who are at present wasting their time in workhouses or are engaged in occupations which are dangerous to them.

Last year we recommended that a further trial should be made of *Flechzig's method* of treatment, which consists in first giving large and increasing doses of opium for some weeks, then suddenly stopping this, and substituting large doses of the bromides. **Rabbas** (*Allgem. Zeitsch. f. Psychiatrie*, vol. lii., p. 796) has tried the method in sixteen cases, and found that in fourteen there was an increase of the attacks during the opium treatment. The subsequent bromide treatment then caused a complete disappearance of the attacks for two years in three of the patients. In five women the attacks ceased for from six to ten months, and were then less frequent than before. In the remaining cases the cessation of fits was but transitory, and in one case they increased. **Linke** (*ibid.*, vol. lii., p. 753) treated seven cases by opium and bromides; three of them showed vast improvement, and two lasting improvement. In one case, on the twenty-eighth day of

the bromide treatment, failure of the heart and unconsciousness set in, and at the autopsy fatty changes in the heart muscle and dilatation of the ventricles were found. In another case, on the twenty-fifth and twenty-eighth days of the bromide treatment, there were epileptic attacks, and somnolence set in, but some improvement followed when the bromide was stopped; coma again supervened, and the patient died in five days.

Bechterew's method of giving *adonis vernalis* (to lessen cerebral hyperæmia by its vaso-constrictor action) with codeine and bromides was also alluded to last year, and it has been further tried. **Lui** (*Brit. Med. Journ. Epit.*, 1895, vol. ii., p. 79) has used it with success; but **Guiccardi** (*ibid.*) concludes that the effect of the treatment is entirely due to the bromide and not to the *adonis vernalis* and codeine. He thinks the mixture, however, is better borne than the bromides alone, because *adonis vernalis* is a vascular tonic. **Taty** (*Lyon Médical*, December 29, 1895, and January 5 and 12, 1896) gives the results of a long series of cases which he treated with mixture of potassium bromide, *adonis vernalis* and codeine, in order to determine whether it had any effect on the fits, and what this effect was; and whether the association of drugs would enable us to avoid the bad effects of bromide, and to increase the tolerance for this drug. In the first series of cases the author found that the addition of *adonis vernalis* and codeine did not obviate the chief inconveniences of the bromide treatment; the pulse rate and urinary functions remained normal, but constipation was the rule, and somnolence was very marked in most cases. In a few cases a series of fits accompanied by diarrhœa occurred a few days after the drugs had been stopped. *Adonis vernalis* given alone was well borne, but did not modify the fits. The codeine was found to be the cause of the somnolence and constipation, and was not thought to be a good addition to the mixture. In one case in which the fits did not yield to bromide alone, the addition of *adonis vernalis* rapidly lessened them. Bromism was not prevented by the use of the mixture, and the mental condition produced was the same as when bromide alone was given. The *adonis vernalis* was not found to disturb the circulation, but made the heart beat fuller and slightly more frequent, and did not accumulate like *digitalis*.

V.—THE TREATMENT OF TETANUS.

The literature of the treatment of tetanus has not been so abundant as usual during the past year, and though a few cases of treatment by tetanus antitoxin have been reported, the recoveries

have been principally in those cases in which the tetanic symptoms did not set in until more than ten days after the injury, when the prognosis is nothing like so bad as when there is a more acute onset.

Steer's case (*Brit. Med. Journ.*, February 15, 1896, p. 400) was one in which the symptoms began on the eleventh day after injury, and were at first slight, but became more severe in three days, when antitoxin from the British Institute of Preventive Medicine was injected twice in twenty-four hours, recovery following in ten days. Steer says that the antitoxin did not prevent the spasms, but certainly appeared to hold them in check.

In Howlett's case (*Med. Chron.*, December, 1895, p. 186) the symptoms began eighteen days after the injury. The antitoxin employed seemed to increase the spasms for a time, but subsequently recovery took place. Howlett attributes failure of action of the antitoxin to the fact that it only stops the formation of fresh toxin ferment, but does not destroy what has been already formed; the latter is, however, destroyed by phagocytosis if only the patient can be kept alive. He advises that antitoxin should be injected not once only, but every day, until the bacilli are destroyed; the wound must be vigorously attacked with disinfectants, and drugs must be given to mitigate the symptoms.

Llewellyn (*Brit. Med. Journ.*, February 15, 1896, p. 400) reports the recovery of a patient in whom tetanus came on eleven days after an injury, the treatment consisting of chloral (20 grains every four hours), sulphonal and calabar bean. Sbrana (*Rif. Med.*, March 16, 1896) had a case of tetanus with symptoms commencing twelve days after injury, which he treated successfully by injecting a 2 per cent. solution of phenol three times a day for a fortnight.

In considering the value of tetanus antitoxin, Worthington (*St. Bart.'s Hosp. Reports*, 1895, pp. 137—154) has published an excellent paper, in which are collected sixty-eight cases of tetanus in Britain, published between the years 1884 and 1894, none of which were treated with antitoxin, and he compares them as regards prognosis with the cases of tetanus treated with antitoxin which were collected by Kanthack (*vide* "Year-Book of Treatment," 1896, p. 80). Worthington says the prognosis of tetanus depends on three factors:—(1) The incubation period; (2) rapidity of onset and severity of spasms; (3) duration of the disease. The gravity of the prognosis is, roughly speaking, in inverse proportion to the length of the incubation period and the duration of the disease, and in direct proportion to the rapidity of the onset and the severity of the spasms. Of the sixty-eight cases recorded, twenty-eight died, a mortality of 41·17 per cent.

Of twenty-four acute cases, sixteen died, or 66·6 per cent. In twenty-eight milder or more chronic cases, there were only five deaths, or 17·8 per cent. As regards duration, thirteen out of twenty-six, the dates of which were published, died within two days, and twenty-three out of twenty-six, or 88·5 per cent., within seven days. If the patient lives a week the prognosis as a rule is good, as only 10·7 per cent. died after that date. The following table is given comparing these cases with those treated by antitoxin mentioned by Kanthack :—

(a) Death-rate of all cases.

1. Antitoxin cases	...	...	...	37·00 per cent.
2. Ordinary	„	...	...	36·26 „

(b) Death-rate of acute cases.

1. Antitoxin cases	...	...	85·70—69·20	„
2. Ordinary	„	...	78·20—66·60	„

(c) Death-rate of chronic cases.

1. Antitoxin cases	...	...	15·78—5·70	„
2. Ordinary	„	...	17·80—10·30	„

From these numbers it seems that in acute cases the death-rate in cases treated with antitoxin is higher than in those treated by other methods, but in chronic cases it is distinctly lower.

VI.—INSANITY.

1. Insanity of pregnancy and the puerperal state.

Savage (*Brit. Med. Journ.*, January 18, 1896, p. 150) classifies these cases as follows :—1. Insanity of pregnancy—(a) coming on in the early months of pregnancy; (b) coming on in the later months. 2. Insanity of labour—(a) hysterical and transient; (b) more lasting or permanent. 3. Ephemeral insanity associated with febrile disorder at the onset of the milk flow; this may pass off or lead to acute delirious mania. 4. Insanity coming on within the first fourteen days after labour and between that date and six weeks after labour. 5. Insanity of lactation and insanity of weaning.

As a rule, recurring attacks in the same patient, whether preceding or following parturition, are similar in character. Heredity was a most important factor in the causation, but Savage did not find as a rule that there was a previous history of hysteria. First pregnancies, especially if they occurred after

thirty years of age, were more dangerous than later pregnancies, and previous attacks were powerful causes of later ones. The "longings" of pregnancy might be of an insane nature or might lead on to insanity; the insanity of the earlier months might pass off naturally at the "quickening," though that of the later months rarely passed off with delivery. During labour there might be hysterical outbursts with each pain, passing off after labour, or they might leave the patient unstable for days, and even lead to mania. In some cases the administration of chloroform might cause similar disorders. Early ephemeral mania coming on with the flow of milk, together with feverish symptoms, might be relieved by a purgative. True puerperal mania might depend on sepsis. During the first fortnight after delivery mental symptoms coming on were in the form of mania, but if coming on after this, melancholia was more common. Sometimes the attacks could be cut short by hypnotics. The duration of the mental symptoms was from a few weeks to months, and in many cases removal from home or at least frequent changes in the surroundings were necessary. Further pregnancies should be avoided for some years. About 8 per cent. of patients suffering from puerperal insanity died, and nearly 20 per cent. remained more or less weak in mind. Insanity following lactation or weaning was associated with great weakness, and was very lasting.

Hermann, in a discussion on Savage's paper, said that albumen was not often present in these cases, except where they occurred after eclampsia. He insisted on the value of narcotics in relieving the premonitory sleeplessness, using for this purpose full doses of alcohol at bedtime.

2. Sedatives and hypnotics in insanity.

In a discussion on this subject at the British Medical Association meeting, 1896, Oswald (*Brit. Med. Journ.*, 1896, vol. ii., p. 807) pointed out that all external causes of sleeplessness should be removed, and for this purpose specially quiet rooms should be arranged in asylums. As regards drugs, the author preferred paraldehyde in acute cases, as it had no bad effects, did not depress, and was a slight diuretic; he thought, however, that it was a mistake to rely entirely on one hypnotic to the exclusion of all others. Sulphonal he considered of doubtful value, as its prolonged administration might bring about a mild dementia; it cut short periods of excitement, but the patients did not regain mental clearness. Drugs were not the best hypnotics in mental cases, but rather exercise, work, distraction of thought, and amusement.

Campbell said there was no evidence of the curative influence of hypnotics and sedatives in insanity, and he thought that the continued use of the drugs retarded recovery.

McDowall used hypnotics much less than formerly ; but he still gave them freely in melancholia, though he never administered morphine or hyoscine.

VII.—MISCELLANEOUS.

1. Nitroglycerine in sciatica.

Krauss (*New York Med. Journ.*, February, 1896) records seven cases of sciatica in which he used nitroglycerine when other drugs had not been of service. All these seven patients received marked benefit from the very beginning of the treatment. In the acute cases they recovered in from ten days to a month ; in the chronic cases they improved notably. The drug was administered in the form of a 1 per cent. solution, beginning with doses of 1 minim three times a day, and increasing to 4 minims if necessary ; or tabloids may be given instead of solution. Bitter tonics and cod-liver oil were given at the same time to improve the general condition. The only disadvantage of using the drug was that congestive headaches were caused, to counteract which bromides were given.

Mikhalkine (*Journ. de Méd. de Paris*, April 21, 1895) has also tried nitroglycerine in three cases of obstinate sciatica in which the ordinary remedies had failed ; two cases were cured, and the third was improved. The drug was given as a 1 per cent. solution in alcohol.

2. Cocaine in neuralgia.

Seagrave (*Brit. Med. Journ.*, February 8, 1896, p. 335) advocates the use of cocaine given by hypodermic injection in lumbago, sciatica, pleurodynia, all forms of muscular rheumatism, and for neuralgia of the head and face. In the last case the injection should be made into the arm, but for the other cases should be injected into the seat of pain in doses of $\frac{1}{4}$ to $\frac{1}{2}$ grain.

De Havilland Hall (*Brit. Med. Journ.*, February 8, 1896, p. 335) says that in order to lessen the dangers of injection of cocaine he combines it with resorcin. The solution employed contains 10 per cent. of resorcin and 20 per cent. of cocaine hydrochlorate. The resorcin diminishes the toxic effect of the cocaine, increases its anæsthetic action, and prevents it from crystallising out. He never applies cocaine to the nose by spray, but by means of cotton-wool on a holder. If by chance a patient becomes pale, giddy, or faint after cocaine, compound spirits of ammonia and amyl nitrite should be given.

3. Muscular exercises in nervous diseases.

In addition to the use of regulated gymnastics for the treatment of tabetics, **Fraenkel** (*Sem. Méd.*, April 24, 1896) describes a method of treating certain motor disturbances, such as paralysis agitans, chorea, convulsive tic, and aphasia, by subjecting the muscles affected to a process of re-education by means of a series of graduated exercises, at first very simple, and afterwards more complicated, according to the nature of the case. The muscles of the trunk play an important part in locomotion, so they must not be forgotten. Improvement is found to be limited to the movements directly affected by the exercises, and can be explained only by the assumption of a favourable influence exerted by the treatment upon the functions of the brain. For instance, in paralysis agitans the cause of the disturbance is generally supposed to be in the central nervous system; but the cerebral symptoms are, however, probably reflex, and the affection really of peripheral origin. The patient is made to contract the affected muscles during one or several sittings daily; the muscular rigidity thus may gradually disappear, and patients may again be able to walk and even to write. In chorea the patients are required to execute the same movements which result from the choreic spasms, endeavouring to transform involuntary into voluntary movements. The treatment is useful only in those nervous diseases in which the sub-cortical and spinal paths of transmission are intact. Myelitis, multiple sclerosis, or spasmodic paraplegia receive no benefit from it.

4. *Tabes dorsalis* and syphilis.

Storbeck (*Zeitsch. f. klin. Med.*, 1896, p. 140) gives various statistics as to the frequency of syphilis as an antecedent of tabes. It was Fournier who, in 1876, first drew general attention to the importance of syphilis in the ætiology of tabes, and stated that 93 per cent. of his cases had a history of syphilis. Déjerine makes the percentage 97, Strümpell 90, Gowers 80, Jolly and Gerhardt 50. Westphal found a history of syphilis in 33 per cent., but knew of no case in which antisiphilitic treatment had cured the disease; in eleven autopsies of tabetics he found remains of syphilis once only. Out of Leyden's 108 cases of tabes, in about 20 per cent. a history of syphilis was certain, in about 24 per cent. doubtful, while the rest were supposed to be non-syphilitic.

Erb (*Berl. klin. Woch.*, March 16, 1896), who in a former paper in 1891 found in 300 cases of tabes that 89 per cent. had had syphilis (but only 63 per cent. had certainly had secondary symptoms), now tabulates his cases since 1891. He confined his present statistics to males of the upper classes, and out of 200 consecutive cases finds a history of syphilis in 92·5 per cent.,

though only 61·5 per cent. had certainly had secondary symptoms. Amongst his 200 cases were three pairs of brothers, but all the six had had syphilis. Out of nine women tabetics, six had certainly, two fairly certainly, and one probably had syphilis.

5. Mechanical treatment of tabes dorsalis.

Belugou (*Arch. gén. de Méd.*, February, 1896) passes in review all the various methods of treating tabes by suspension and other mechanical methods, including nerve-stretching. He thinks suspension is certainly of benefit in treating some of the symptoms in a few cases. Thus the gait, motor inco-ordination, to a certain extent Romberg's sign, and vesical paresis are often benefited. But he finds that the method is contra-indicated in rapid cases, in laryngeal crises, advanced age, anæmia, œdema, obesity, and lesions of the cardio-vascular system. The method of compensatory gymnastics, first introduced by Fraenkel, is recommended for trial. These movements are divided into three classes: (a) movements of flexion, extension and abduction; (b) simple co-ordinated movements in definite directions and against resistance; (c) combined co-ordinated movements. By use of this method the author has obtained some very satisfactory results; but too much must not be expected of the method, and cases of slow evolution, or with very marked sensory derangement, or with joint complications, are least likely to be benefited.

6. Gastric crises in tabes.

Ostankow (*Wien. klin. Woch.*, No. 24, 1896) has found that cerium oxalate in doses of 2 to 5 grains three times daily shortened attacks of gastric crises; the frequency of the vomiting fell on the second day from 200 times in the twenty-four hours to six or eight, and lower still on the third day.

7. The ætiology of disseminated sclerosis.

Oppenheim (*Berlin. klin. Woch.*, March 2, 1896) says that it is probable that intoxications of various kinds play an important part in the causation of disseminated sclerosis, and therefore the occupations of the patients should not be overlooked. In twenty-eight out of thirty-six cases treated by the author, the history was carefully inquired into, and in eleven out of the twenty-eight the patients had long been exposed to the influence of such poisons as lead, copper, zinc, etc. Not a few cases have been known to follow upon the infective fevers, such as influenza, malaria, etc., and traumatism probably plays some part in the disease. At other times the disease dates from childhood, therefore congenital causes may exist. The relapses in disseminated sclerosis may often be traced to definite causes, such as over-exertion, exposure to cold, trauma, pregnancy and parturition.

DISEASES OF THE STOMACH, INTES- TINES, AND LIVER.

BY W. HALE WHITE, M.D. LOND., F.R.C.P.,

Physician to Guy's Hospital.

THERE is no very striking advance in our knowledge to be announced in the department of diseases of the organs of digestion. We have, however, again learnt that the physician can derive great advantage in many cases from calling in the aid of the surgeon, and perhaps this lesson will be the more impressed upon the reader if we quote some cases in point.

1. Mayo Robson (*Medico-Chirurgical Trans.*, vol. lxxix., p. 159) reports a case in which it was both feasible and useful **to remove a portion of the liver for cancer.** The patient was a woman aged fifty-four, whose liver extended down to the umbilicus, and it had depending from it a large, firm, rounded tumour, which reached to the right groin. The tumour was dull on percussion and did not fluctuate, though a thrill on succussion showed the contents to be fluid or semi-fluid. A diagnosis of enlarged gall-bladder, due to impaction of gall-stones in the cystic duct, was made, and the presence of secondary malignant disease was suspected. The abdomen was opened by an incision in the right linea semilunaris; some fluid and a quantity of putty-like matter and a gall-stone were removed from the gall-bladder. It was found that there was a mass of growth the size of a walnut at the entrance of the cystic duct, and also a mass in the contiguous part of the right lobe of the liver. Briefly the operation consisted in putting a tourniquet round a part of the right lobe of the liver so that the gall-bladder, cystic duct and hepatic cancer were all peripheral to the tourniquet. This mass was pulled out of the wound and cut off, and the stump dressed with boracic acid. The woman made an excellent recovery. She went home six weeks after the operation, having gained flesh, and five months afterwards she still remained well. This is a brilliant example of

bold, but at the same time judicious and skilful surgery. Unfortunately, however, common as is hepatic carcinoma, the cases that would be suitable for excision are very few, for usually by the time the patient comes under a doctor there are many nodules in various parts of the liver.

2. The next new departure is for the treatment of **membranous colitis**. Although as compared with carcinoma of the liver this is a very rare disease, still probably more cases of membranous colitis than of cancer of the liver lend themselves to surgical treatment. The first case to be recorded was one by **Hale White** and **Golding-Bird** (*Clin. Soc. Trans.*, vol. xxix., p. 45); but **Christian Simpson** (*Med. Press and Circular*, July 29, 1896) reported a case a few months later which had been operated upon by **Keith** a little earlier than the case first recorded. Both patients were women, and both had for many years passed blood and casts *per rectum*, and were wasted, thin, and suffered from very severe abdominal pain. No treatment had any effect in improving either patient. The object of the colotomy, which was on the right side in both cases, was to allow the fæces for a time to pass through the artificial opening and thus to give the affected colon complete rest. Several weeks after this artificial anus had been the sole aperture by which fæces escaped from the body, it was closed, and the motions again passed the natural way. Both patients were much benefited by the treatment. **Hale White** and **Golding-Bird's** patient unfortunately died of a different affection, too early for it to be possible to say if the cure was permanent; but in **Simpson's** case two years after the operation he was able to report that only once or twice had the patient seen any membranes. When it is remembered that these cases when severe are quite intractable, and the pain, loss of blood, constipation and dyspepsia make the patients utterly wretched and quite prevent their following any occupation, there can be but little doubt that, if the case is so severe as to incapacitate the patient, this mode of treatment should have a trial.

3. Pylorectomy for cancer of the pylorus is an operation which has a high mortality, and it is one in which it is by no means easy to attach the cut end of the duodenum to the cut end of the stomach. For these reasons it is rarely done nowadays, and if it is decided that an operation is desirable, a gastro-enterostomy is probably the best. If there is much pyloric obstruction, life is probably prolonged and the patient is saved much suffering.

Rixford (*Occidental Med. Times*, September, 1896) has had a most brilliant case in which the two operations were combined.

The patient, a woman aged forty-one, suffered much from vomiting, constipation and loss of flesh. A freely movable, very hard tumour, about the size of a small kidney, could be felt in the region of the pylorus. The stomach was evidently greatly dilated and much hypertrophied. At the operation the stomach was first emptied, three quarts of filthy fluid being removed. The tumour of the pylorus was seven centimetres long, four across. It had very few adhesions, and no enlarged glands could be detected. A strip of gauze was tied round the duodenum well beyond the tumour, and another around the stomach, also well beyond the tumour. By this means leakage of the gastro-intestinal contents was prevented. The tumour was then removed well beyond the limits of induration. The open end of the stomach was closed, first the submucous and mucous coats being united and then the muscular and peritoneal. The end of the duodenum was treated in the same way. Lateral anastomosis between the jejunum and the greater curvature of the stomach was then made with a Murphy's button. The abdominal wound was then closed, a glass drainage-tube being inserted. The operation took one hour and a half. Microscopical examination showed the tumour to be a carcinoma. The patient was fed by the rectum until the sixth day, when feeding by the mouth was begun. At the end of three weeks the wound had completely closed, and the patient was able to be out of bed. Nine weeks after the operation she had gained over 30 lbs. in weight, and three months later she was still in excellent health, and digestion seemed perfect. This is certainly a most brilliant case, and reflects the greatest credit on the operator. It is, however, unlikely that this combined operation will ever be common, for usually either the growth is not so limited as it was in this case, or there are adhesions, or some glands are secondarily affected.

4. Another good instance of the advance made by the surgeons in the amount of help they can give physicians is shown by a brilliant case recorded by L. A. Dunn (*Clin. Soc. Trans.*, vol. xxix., p. 155). He successfully sutured a **perforated duodenal ulcer**. The patient, a man aged 53, felt a sudden pain in the abdomen; he quickly became very faint and vomited. When he was seen next day it was found that he had all the symptoms of perforation of a hollow viscus. The abdomen was opened, some gas and fluid escaped; no perforation could be found in the stomach, but as bubbles of gas and some fluid escaped from the right and upper part of the abdomen the duodenum was carefully examined and a perforation was found in it. This was closed by a row of fine silk Lembert sutures. A small abscess subsequently formed near the site of the perforation, but this was

successfully evacuated, and the patient did well and went back to his work. This case illustrates admirably the good results which may be fairly expected nowadays to follow early operation in cases of perforation of hollow viscera. These operations have been carried out most successfully in cases in which a small round ulcer of the stomach has perforated, but now the attempt is being made to extend this operation to cases of perforation in typhoid fever.

5. Operation in typhoid fever with perforation.

Price (*Therap. Gazette*, May, 1896, p. 305) states that up to the present time twenty-six cases have been recorded, with eight recoveries. If the subsequent enlarged experience of the profession should also show a success in any degree approaching this it will become the recognised treatment that when a patient with typhoid fever has the signs of perforation the abdomen shall be opened, the perforation sought for, and if found, closed, and then the peritoneal cavity shall be by thorough washing cleansed of all the foetid matter which has leaked into it. The perforated ulcer will be most quickly and most easily found by beginning near the cæcum and from there examining the ileum upwards. Dr. Caley and Mr. Bland Sutton brought a case before one of the London societies not long ago in which this treatment was adopted; the patient died. Most English physicians and surgeons seem to have been unfavourably impressed by this case, for the treatment has made but little way in England, although a successful case will be brought before the Royal Medico-Chirurgical Society early this session, and there will probably be a full discussion of the subject. Certainly the doctor will have to be very cautious in advising it, for in the third week of typhoid fever patients are liable to symptoms of collapse quite indistinguishable from those of perforation, from which, however, they entirely recover. Even the most experienced often cannot tell whether or not these symptoms are due to perforation, and it might well kill a patient in whom they were not due to a perforation to perform an exploratory laparotomy upon him. If this operation for perforation is to succeed it must be a rule that whenever possible those with considerable experience of abdominal surgery must be chosen to perform it, for of all abdominal operations it will require rapidity and skill. Other recent papers on the same subject are those by Hotchkiss (*New York Med. Journ.*, January 11, 1896) and Hollis (*Lancet*, May 9th, 1896).

6. Diseases of the colon are probably more in the minds of doctors than they used to be. We have already referred to the

new treatment for severe membranous colitis. Baughman (*Therap. Gazette*, February, 1896, p. 129) rightly draws attention to the great good that can often be done by washing out the large bowel. The operation is performed in just the same way as that of washing out the stomach. After the bowels have been opened in the morning the patient should lie on his left side with the pelvis considerably raised by a pillow, then a soft rubber rectal tube should be passed up as far as it will go. It should be connected with a long rubber tube which has a funnel attached, and then by raising the funnel above the patient one or two quarts of water or boracic solution of a temperature of about 100 should be allowed slowly to flow into the large bowel, and then after the fluid has been retained for about five minutes it may by depressing the funnel be made to flow out again. If necessary various drugs may be applied in this way. Thus the bowel may be washed out with hazeline solution, or, as Baughman suggests, hydrastis or a suspension of subnitrate of bismuth may be used. We are certainly disposed to agree with his concluding remarks—namely, that most cases of a simple inflammatory character in the sigmoid may be cleared up by this treatment, and many cases of chronic diarrhoea, dysentery and constipation of years' standing may be cured provided the inflammatory process has not produced organic changes that are beyond relief. It is probable that washing out of the bowel is not nearly often enough resorted to in practice.

7. Chronic dilatation of the colon is a rare condition; still Rolleston and Haward have published (*Clin. Soc. Trans.*, vol. xxix., p. 201) a case which is so interesting that we must refer to it. The patient, a boy aged 12, had had constipation almost all his life; sometimes the bowels were not open for several weeks at a time. He was on admission much emaciated; the abdomen was enormously distended, his girth at the umbilicus being 31 inches, although he only weighed 61 lbs. He died suddenly three months after admission during a period of constipation. On opening the abdomen, the only viscera visible were the cæcum and vermiform appendix, the splenic flexure very much distended and in contact with the cæcum, and the descending colon and sigmoid were also enormously distended. The descending colon measured $5\frac{1}{2}$ inches across. The authors give a very careful bibliography of the disease. These cases, it must be remembered, never show any obvious obstruction to which the dilatation could be referred, nor is the supposition that they are secondary and the obstruction due to a kink in the bowel very satisfactory; probably they are allied to those cases of dilatation of the stomach in which no obstruction can be found, and they should be regarded as due

to some weakness of the wall of the colon. The patient's life is always one of great misery, and sooner or later the condition kills him; therefore, future experience will very likely show that the right treatment is to open the cæcum, and let the patient use the artificial anus thus formed there. Whether or not this artificial anus should be closed later would depend entirely upon the degree to which the large bowel regained a healthy condition.

8. Intestinal Antisepsis has of late years been the subject of many writings, and it is particularly in infantile disorders that antiseptics have been used. **Soltau Fenwick**, in a paper on the use of antiseptics in the treatment of infantile diarrhœa (*Brit. Med. Journ.*, December 21, 1895, p. 1545), points out that although at birth the intestinal canal is free from micro-organisms, yet it soon becomes full of them, and their development is much favoured by the fact that at an early age the gastric juice has no antiseptic properties. Lactic acid develops from the milk sugar, and the lactic acid is converted into butyric acid with the formation of free hydrogen; hence the distension so common in children, while the undigested irritating food leads to diarrhœa and colic, which cease when the irritants have been evacuated. If, however, the supply of unsuitable food is maintained, the diarrhœa continues, the intestine becomes inflamed, the normal secretions are stopped, and the child wastes. The antiseptics may be divided into two classes—those soluble in water, as carbolic acid, perchloride of mercury, hydrochloric acid, salicylate of soda and resorcin, and those insoluble in water, as naphthalin and naphthol, betol, benzol naphthol, salol, the salicylates of bismuth and strontium and calomel. The soluble drugs only influence the upper part of the alimentary canal, for they are quickly absorbed; the insoluble are inert in the stomach and upper part of the intestine, but becoming dissolved lower down, act there. The dilute hydrochloric acid of the Pharmacopœia is often useful; lactic acid, which is a weak antiseptic, has been used, the dose being a teaspoonful of a two per cent. solution every two or three hours. Some French physicians particularly recommend it for green diarrhœa. Carbolic acid is not suitable for children on account of its taste and poisonous properties. Perchloride of mercury must on account of its poisonous nature be used with care, but doses of $\frac{1}{16}$ to $\frac{1}{12}$ grain every two hours have been given. Resorcin is a very powerful antiseptic; it is rapidly absorbed, and may be detected in the urine by a violet colour, with perchloride of iron. Naphthalin has been much used in doses of two to five grains suspended in a sweet emulsion; both it and naphthol—which may be given as an emulsion in doses of two grains every four hours—are

powerful antiseptics and but slightly poisonous. Salol, which is split up in the duodenum into phenol and salicylic acid, may be given in divided doses of 10 grains in 24 hours. Benzol naphthol is tasteless and non-poisonous; it is decomposed into naphthol and benzoic acid. It is of considerable value to infants and young children, to whom it may be given in doses of 30 grains in 24 hours. The salicylates of bismuth and strontium are both split up into salicylic acid and the corresponding metallic sulphides; both are tasteless and insoluble, and each may be given in doses of one to three grains every four hours. In acute cases of diarrhœa calomel is particularly reliable, and may be given in doses of $\frac{1}{6}$ to $\frac{1}{3}$ of a grain every few hours. If the case is seen very early, all that is necessary is a brisk purge and careful dieting, without any drugs. In the more chronic cases the author prefers resorcin, and thinks that on the whole three grains of it every four hours for infants a few weeks old is the most satisfactory intestinal antiseptic we have. The beneficial effect is usually noticed after the third or fourth dose, and at the end of the second day the diarrhœa has stopped. In only about seven per cent. of his cases did diarrhœa persist if the treatment had been continued a week.

9. The action of beta-naphthol and bismuth sub-nitrate as intestinal antiseptics.

Surveyor and Vaughan Harley (*Brit. Med. Journ.*, December 14, 1895) have attempted to compare these drugs and adjudge their antiseptic value. They estimated the ratio of normal and aromatic sulphates in the urine, and after the drug was given, the power of each drug in a test-tube cultivation and the action of each drug in diminishing the growth of micro-organisms in the intestinal canal of dogs. The interpretation of the results is far from easy, but probably there is very little to choose between the two remedies.

A paper by H. Stein (*Centrallb. f. d. g. Therapie*, 1896, Bd. xiv., p. 321) gives a good summary of our knowledge on the subject. It is highly probable that too much has been expected of intestinal antiseptics. In the first place we know it as an almost certain fact that bacterial processes in the alimentary canal are absolutely necessary for healthy digestion, so that it is quite likely that in our attempts to kill the micro organisms of specific fevers we may, even if we succeed, do more harm than good, because we interfere with normal digestion; or even worse: it may be that the specific micro-organisms being more resistant to antiseptics than those present in health, we may stop digestion and yet leave the specific micro-organisms to flourish. Then, too, we must remember

the great difficulty of disinfecting such a great length of bowel by a drug given in small quantities by the mouth. A surgeon would be rather astonished if he were expected to disinfect a sinus 30 feet long in any other way than by thoroughly syringing it out. Then, again, in many specific diseases such as tubercle and typhoid the bacilli are found embedded in the wall of the intestine, quite out of the reach of any drug which simply passes along the canal; also if a quantity of most antiseptics sufficient to disinfect the bowel were given, that quantity would seriously harm the patient; and lastly, the antiseptics will not act upon the myriads of micro-organisms which must be embedded in the central parts of hard faecal masses. It is probable that these reasons explain the fact that although nowadays most physicians are very anxious to employ antiseptics wherever possible, the antiseptic treatment of intestinal diseases has not obtained any very firm hold and has not revolutionised our treatment of intestinal diseases as the application of antiseptic principles has revolutionised our treatment of wounds. When we consider the scrupulous attention to minute details which is necessary to keep a wound antiseptic, we realise how unlikely it is that we can by similar means keep down the growth of micro-organisms in the intestinal canal. The problem is much easier in the case of the stomach than in the case of the intestine; yet we know that if a dilated stomach is washed out ever so thoroughly with boracic acid, in a few hours the micro-organisms are again flourishing in the stomach, and that easy as is the application of our antiseptic, the cure of the abnormal bacterial processes necessitates a long period of treatment, and is not effected till we have got the functions of the stomach as a whole into good working order. No doubt many authors, as Soltau Fenwick, have published cases of infantile diarrhœa that have recovered under the use of intestinal antiseptics, but we must bear in mind that careful directions as to dieting are given at the same time that the medicine is prescribed, and, therefore, although it is possible that some antiseptics may in some cases help to cure, yet on the other hand we know that very many cases of even severe infantile diarrhœa yield readily to careful dieting.

10. Infant feeding.

In the last volume of the "Year-Book of Treatment" attention was drawn to the importance of sterilised milk, and Sir William Priestley (*Brit. Med. Journ.*, December 7, 1895) has done good service by presenting to English readers an account of M. Budin's recent observations. In the first place, it is quite certain that there is nothing better than a wet nurse should the mother

be unable to suckle her new-born infant. If this is impossible, sterilised milk should be used, for infantile diarrhœa is often due to the micro-organisms present in the milk of hand-fed children. Boiled milk is not good for infants—partly on account of its disagreeable taste, and partly because the casein is so firmly coagulated that it is not easily digested by the infantile stomach. The best way, according to M. Budin, is to place the bottle of milk in a water bath of boiling water for forty minutes. Each bottle is provided with an indiarubber stopper, which has a valve, so that the vapours from the bottle can escape, but the outside air cannot be sucked back. This milk is best given undiluted; and not only does it prevent infantile diarrhœa, but the substitution of it for ordinary milk will often cure diarrhœa. The best way by far of observing whether a child is progressing healthily is to weigh it frequently.

In the *Brit. Med. Journ.* of January 4, 1896, an admirable milk steriliser is described. It is the invention of Mr. Cathcart, and has the following advantages: (a) it has a capacity of 60 oz.; (b) it is easily heated in an ordinary pot; (c) it has an apparatus for stirring; (d) it permits the quantity required for each feeding to be withdrawn without contamination of the remainder; (e) it is simple in construction, and easily cleaned. The price is 5s.; it is sold by Mr. Gilchrist, Nicolson Street, Edinburgh; and it may be obtained from Messrs. Down, St. Thomas's Street, London, S.E.

11. Infantile intussusception.

Wiggin (*Pediatrics*, vol. i., No. 3, p. 117) read a valuable paper on this subject before the New York Academy of Medicine. He began by citing some exceptional cases, and then he gave an account of Mole's researches. This author, after experiments on the cadaver, concluded—(1) that no harm could be done to the healthy intestine by the injection of fluids under moderate pressure; (2) that hydrostatic pressure was more uniform than atmospheric, and therefore less likely to cause rupture; (3) that over-distension was most likely to cause rupture of the transverse colon. Wiggin collected 103 cases as the basis of his paper. Fifty per cent. occurred in the fourth, fifth, and sixth months, in about equal proportions; and 89 per cent. were ileo-cæcal. Sometimes it appeared possible that external violence, as by violently jumping children up and down, had been the cause. Of thirty-nine cases treated by intestinal distension, 59 per cent. were fatal. In the successful cases the average hour of beginning the treatment was the forty-first from the onset; among the fatal it was the sixty-ninth. There was generally much doubt as to the reduction of the tumour. If distension be tried, Wiggin thought that one

pint and a half of tepid saline solution should be injected under a pressure of three feet ; if this first enema is not successful, resort should at once be had to laparotomy. Sixty-four of the 103 cases were treated by operation, and 67·2 per cent. were fatal ; but since 1889 the mortality was only 22·2 per cent. This was to be attributed to greater skill and care in operation, and therefore he was strongly in favour of operation. Jacobi considered that the mortality was much higher than 22·2, and believed that many unsuccessful cases were not recorded. Curtis also spoke, and said he believed that the mortality was nearly 60 per cent.

12. Bismuth.

Salts of bismuth are so frequently used in the treatment of gastric and intestinal affections, and so often with such striking benefit, that any addition to our knowledge of them is welcome. It has long been known that they are not poisonous, or at least not even in large doses, for very large quantities are frequently given for the treatment of tuberculous diarrhœa. Probably the symptoms in the supposed cases of bismuth-poisoning were really due to the contamination of the bismuth with arsenic. The feeble poisoning power of bismuth is well shown by a case recorded by Mathieu (*Rev. Internat. de Méd. et de Chir.*, January 10, 1896), in which a patient took fifty ounces of the subnitrate of bismuth in twenty-four days. Excepting slight constipation, no effects were produced by this very large dose. Cases like this have led to the view that the action of bismuth salts is purely mechanical, and that the inert heavy powder simply acts as a protective to diseased surfaces. This view has always appeared very unsatisfactory. Ten grains of a bismuth salt are often very efficacious in relieving gastric pain and dyspepsia, and yet so few grains of so heavy a powder can only to a slight extent act as a protective. Evidence is now being brought forward to show that it has a genuine and powerful bactericide action. For instance :

Carless (*Brit. Med. Journ.*, April 4, 1896) states that outside the body subnitrate of bismuth prevents decomposition. He believes that in the stomach it splits up into bismuth oxide and nitric acid, both substances being antiseptic. In the intestine it meets with sulphuretted hydrogen and is converted into a sulphide, with the liberation of nitrous vapours which are antiseptic. The criticism to be passed upon this view is that although these statements may be quite true, yet it is highly improbable that so small a quantity of an antiseptic can do so much good as often follows the administration of bismuth. Salts of this metal often benefit patients whose symptoms do not appear to call for an antiseptic. And, lastly, the carbonate is

quite as efficacious as the subnitrate. Therefore, even if it be granted that subnitrate of bismuth is an antiseptic, we are still in the dark as to how it acts in gastro-intestinal disorders.

13. Lavage.

The operation of washing out the stomach is frequently so disagreeable, and so few patients can be taught to do it themselves, that probably in England physicians do not recommend it so often as they should. Vomiting that has resisted all ordinary remedies will frequently yield to lavage. Probably Baruch (*Med. Record*, October 5, 1895) is correct in advising it for many forms of indigestion. In cases of chronic dyspepsia he siphons out the contents of the stomach six hours after a meal. If all the food is digested, he concludes that the case is one of nervous dyspepsia; if it is not, and there is much mucus, he concludes that the patient is suffering from gastric catarrh. In passing, we might remark that most likely he is by no means justified in all cases in drawing such conclusions from these facts. Still, probably the treatment he advises does much good; for, if the case is one that falls into his catarrhal category, he washes the stomach out with tepid water before the chief meal of the day, and this, no doubt, gets rid of most of the mucus. He gives the patient very simple diet, and makes him sip hot water on rising in the morning. His favourite drug is a little hydrochloric acid immediately before eating. In the neurotic dyspepsia he finds that it is rarely necessary to wash out the stomach, but that usually treatment with bismuth and magnesia suffices. Certainly most would agree with him that bismuth often acts like a charm in the cases that we call neurotic, and also that many dyspeptics are very much benefited by hydropathic treatment. The two following papers are of importance in the consideration of dyspepsia.

Reale (*New York Med. Journ.*, May 2, 1896) makes the very reasonable suggestion that chronic catarrh of the stomach and diminution of hydrochloric acid should be treated by washing out with nitrate of silver, and he claims great success for the treatment. A one or two per cent. solution of nitrate of silver is about the strength to employ, and, after the stomach has been washed with this, it is washed with a five per cent. solution of ordinary salt and water. Under this treatment the secretion of hydrochloric acid and motor power return, the digestive powers of the stomach improve, and vomiting ceases.

14. The relation of hyperacidity of the gastric contents to oxaluria.

Dunlop (*Journ. of Pathology*, vol. iii., No. 4, p. 389) in a very

exhaustive and original paper on the presence of oxalic acid in the urine points out that the only form of oxalate of lime crystals in the urine is the octohedral, and that the dumbbells are in reality carbonate of calcium. He finds out that the daily amount of oxalic acid excreted normally in man varies usually between .01 and .025 gramme, but has an average of about .0172 gramme. In a discussion on the source of oxalic acid in the urine he concludes that it is not derived from the metabolism of the tissues, nor is it formed, as has so frequently been stated, by the metabolism of uric acid. Turning to the diet, he finds that oxalic acid exists in very considerable quantities in many vegetable food-stuffs, especially tea, coffee, pepper, sorrel, spinach, and rhubarb; during the gastric digestion of an ordinary meal we have therefore in the stomach oxalic acid, which may or may not be in a soluble form, acids favouring absorption and lime hindering it. This oxalic acid is the source of the oxalic acid in the urine, and to these two influences the changing quantity of oxalic acid in the urine is due. On a purely milk diet the excretion of oxalic acid ceases, but after stopping the excretion of oxalic acid by milk it is always easy to start it again by giving some tea. He then gave some healthy persons hydrochloric acid with their food, and, as might have been expected from what has already been said, the amount of oxalic acid in the urine was at once increased. The same happened when lactic acid was given instead of hydrochloric. He classifies the symptoms of oxaluria as being (1) the altered condition of the urine, (2) dyspepsia, (3) pains, (4) nervous symptoms. The pains are gastric, cephalic, and lumbar; the last being due to the passage of the crystals through the tubes and pelvis of the kidney. Examining the other symptoms of oxaluria, he shows that they are in reality the same as those of acid dyspepsia: and he finally concludes that oxaluria is merely a symptom of that variety of dyspepsia characterised by an excessive secretion of hydrochloric acid—a view which is supported by the fact that the best way to treat oxaluria is that ordinarily adopted for the treatment of acid dyspepsia.

15. Digestion of starch in the stomach.

Robertson (*Edin. Med. Journ.*, May, 1896, p. 1010) has performed some important experiments on this subject. It is almost certain that normally the hydrochloric acid in the stomach combines with the proteids during the earlier stages of digestion, and so, no free acid remaining, saliva continues its converting action on the starch. This condition continues for about three-quarters of an hour to two hours, when, the proteids having combined with as much hydrochloric acid as they require, free

hydrochloric acid appears in the gastric secretion. The conversion of starch in the stomach then ceases, as the action of the ptyalin is stopped by the acid. Robertson found that when starch alone was taken, the acid of the gastric juice did not so much destroy the ptyalin as hinder its action; that there was no evidence that starch could be digested by the stomach, as some have asserted; that when this appeared to take place very little acid was secreted by the stomach, so the ptyalin had full play there. From this it follows that, as the digestion of starch depends upon the rapid action of ptyalin, it must be well masticated, and that it is better digested when taken with proteid diet.

Tannigen has been used a good deal as an intestinal astringent. It is diacetyl tannin, and the dose is three to eight grains in a cachet. It is a greyish-white, tasteless powder, which is not dissolved till it reaches the intestine, and has therefore the advantage of not upsetting the functions of the stomach. The reason of its not being dissolved till it reaches the intestine is that it is insoluble in acid media, but is soluble in alkaline; and therefore in the intestine the tannic acid is liberated and exercises its astringent effect. The drug has been strongly recommended by **Escherich** (*Therap. Monats.*, March 9, 1896).

There is little doubt that many who practise in Great Britain have been disappointed in the employment of ipecacuanha without emetine—or the de-emetised ipecacuanha, as it is called. **Walsh**, too (*Clin. Journ.*, Feb. 19, 1896), does not find that it does much good in dysentery, and this led him to the conclusion that the emetine was probably the effective agent. He has used a compound of emetine with the red iodide of mercury. One grain of emetine was taken daily, and most of the patients did very well. But Walsh says—and we think very truly—that in dysentery we must not place too much faith in drugs, for rest in bed and careful dieting have more to do with the good results than drugs.

16. Appendicitis.

There is every year a large literature on this disease. During the past twelvemonth one of the most important papers has been that by **Dieulafoy** (*Clinical Journ.*, September 9, 1896). He first brings forward strong evidence to show that micro-organisms (especially the bacterium coli commune) which are usually harmless acquire when shut up in a piece of gut closed at either end extraordinarily virulent properties. Hence the inflammatory changes in a hernial sac. The first step in appendicitis is that the lumen of the appendix becomes in some way closed; then in the shut peripheral part the micro-

organisms become virulent, inflammatory troubles supervene, and an attack of appendicitis is set up. Many causes, such as faecal concretion, etc., will at once suggest themselves to explain the occlusion of the canal of the appendix. The next point to which the author directs attention is the fact that appendicitis often runs in families, and he quotes some very striking cases in point. He goes even further, however, and claims that these families are often affected with gout, arthritism, urinary and biliary gravel: and he concludes that arthritism, obesity, biliary lithiasis, gout, diabetes, lithiasis of the kidney and appendix, are various possible manifestations of the same diathesis. Dieulafoy believes that appendicitis is entirely in its treatment a surgical complaint, and he insists most strongly that the patient should always be operated upon and have the appendix removed. Most physicians and surgeons in England would not follow this treatment. Probably, if the attack is a mild one, it is better to wait till the patient has recovered from it, and then to discuss with him the propriety of operating to prevent the recurrence of other attacks.

17. The treatment of Glénard's disease by abdominal section.

Treves (*Brit. Med. Journ.*, January 4, 1896) draws attention to this malady, which is also known as visceral ptosis. It depends upon a relaxation of the abdominal wall and of the supporting ligaments of the viscera, as a result of which the more conspicuous organs drop to a lower level in the abdomen. The transverse colon is believed to be the first part to descend; as a result the stomach is dragged down, the pyloric opening is thus compressed, and the passage of food hindered. The whole mass of the small intestines becomes prolapsed, the lower part of the abdomen is prominent and pendulous, and the upper part is flattened. The liver and kidney become loose, and float. The disease is usually met with in women. The patient becomes an invalid, and suffers so from irregularity of the bowels and a sense of weight in the abdomen, a weariness, and a sickening dragging, that she can only get comfortable when lying on her back; she is, in fact, a confirmed invalid. Usually she is very neurotic. The symptoms are nearly always relieved by pressure on the lower part of the abdomen, and consequently these patients almost always wear a belt. Treves reports the case of a woman, aged twenty-two, who suffered from Glénard's disease. She had tried every possible means of treatment, without avail; so the abdomen was opened with the object of fixing the liver in position. It was found that the cause of the condition was

that the lower part of the omentum was adherent to some tuberculous glands in the left iliac fossa, and that, when it was freed from these, the organs returned to their normal positions. The liver was stitched in place, and the patient made an excellent recovery, and all her troubles were relieved. Treves discusses how far other cases of Glénard's disease may be due to peritoneal adhesions.

18. Treatment of gall-stones.

Probably the most generally useful thing that has been done in connection with diseases of the liver is the publication of Brockbank's book "On Gall-Stones." We had no good book in the English language treating of this subject fully and from a physician's standpoint. Here we can only allude to that part of the book which deals with treatment. Warm water in large quantity certainly relieves the pain of biliary colic and the effect is increased by the addition of a little bicarbonate of soda. It acts as a warm fomentation applied internally to the liver. The author has experimented most carefully on the subject of the effect of alkalies, and he cannot find any evidence that they have any solvent action on the stone. Any good that alkalies may do is partly a general effect on the whole body, partly due to their aperient action and partly to the quantity of bile excreted being increased by the quantity of fluid in the water drunk. A course at Carlsbad often does great good. Much good is often done by the administration of olive oil; the unpleasant taste may be covered by the addition of a few grains of menthol and a tablespoonful of brandy to about six ounces of oil. The dose varies from two or three to twenty ounces a day, according to the amount the patient can stand. If they cannot take it by the mouth ten fluid ounces *per rectum* will often do as well. Its beneficial action is partly due to its stimulating peristalsis, but chiefly to the fact that it is excreted in the bile. Oil, fatty acids and sodium or potassium soaps are all good solvents of cholesterin, which is the chief ingredient of gall-stones.

19. Primary carcinoma of the bile ducts.

Rolleston (*Med. Chron.*, January, 1896, p. 241) discusses this subject and refers to its treatment. In nearly all the cases the malignant disease is a cylindrical-celled carcinoma. He recommends that the gall bladder should be put in communication with the small intestine—in other words, that a cholecystenterostomy should be performed. This will, when the obstruction is limited to the common duct, prevent the bile being dammed up in the liver and subsequently absorbed by the lymphatics into the general circulation. Jaundice and cholæmia

with its attendant symptoms will thus be avoided, the patient's health greatly improved, and as in these cases death usually takes place from cholæmia, it will be delayed.

20. The supra-renal capsules.

The attention of the profession has been much directed lately to the treatment of Addison's disease by the administration of supra-renal extract. In some cases it appears to have done slight good, in others no good followed the treatment. More cases will have to be tried before a positive opinion can be passed, but it must be admitted that up to the present the results are not encouraging.

Ringer and Phear (*Clin. Soc. Trans.*, vol. xxix.) describe a case, and give an account of several others that have been recorded. Their own patient was first ordered three pills daily, each consisting of the equivalent of 15 grains of supra-renal extract. The dose was gradually increased, till a fortnight after the commencement of the treatment the patient was taking the equivalent of a quarter of an ounce of supra-renal tissue a day. She became brighter and stronger, and the pigmentation became less, and this improvement continued for four weeks, but during this time she lost 13 lb. and vomited considerably, and she died six weeks after the treatment began. A *post-mortem* examination proved the presence of Addison's disease.

Osler (*International Med. Mag.*, February, 1896) records a case in which supra-renal extract was given for eight months. An extract made from the supra-renal of pigs was used, and three weeks after the treatment began the patient was taking the equivalent of three glands a day. In four months he had gained 19 lb., and was very much better. He then left the hospital, and four months after that he was still in good health, but the pigmentation of the skin remained.

21. Cancer of the head of the pancreas.

It has often seemed to us that this is much more common and important than the text books would lead us to believe, and therefore we are glad that Stiller (*Wiener medizinische Woch.*, November 2, 1895) has called especial attention to it. In primary cancer of the pancreas a tumour cannot often be detected during life, but the patient always wastes rapidly and is usually dead in four months from the first onset of the disease, which is commonly ushered in by pain and dyspepsia, and one symptom of which is often vomiting. The patient generally later becomes jaundiced, the liver is not much enlarged, but the gall bladder is in most cases distended. Often, too, there is some tenderness over the pancreas. Glycosuria and fatty stools are rare symptoms.

22. Inflammatory enlargements of the pancreas capable of undergoing resolution.

Riedel (*Berlin. klin. Woch.*, 1896, 1 and 2) calls attention to the fact that sometimes in cases of gall-stone either several hard nodules or one hard lump may be felt in the head of the pancreas at the time of operation undertaken for the removal of gall-stones. When he first noticed this he thought he was dealing with malignant disease of the head of the organ, and consequently he gave a most unfavourable prognosis, but now experience has taught him that these lumps, which may be as hard as iron, are rarely inflammatory. Sometimes, no doubt, they are due to chronic irritation of the lower part of the common bile duct where it is in relation with the head of the pancreas, but this cannot always be so, for they may be found when the gall-stones occur, only higher up in the biliary passages.

DISEASES OF THE KIDNEYS, DIABETES, ETC.

BY FRANCIS D. BOYD, M.D., F.R.C.P. EDIN.,

Physician to the New Town Dispensary Edinburgh, etc.

SYNOPSIS.

DURING the past year no very striking advance has been made in the field of renal and urinary therapeutics. A discussion of considerable importance took place at the French Medical Congress on the question of prognosis in albuminuria. The so-called "functional albuminuria" received considerable attention, and the conclusions will be found of great interest, especially to those physicians who are engaged in life-assurance work. Some interesting cases of "functional albuminuria" are recorded by Simon in the *New York Med. Journ.*, and the general line of treatment is sketched. Strontium lactate seems to hold its own in the treatment of nephritis. Important communications are made by Jacobi on Nephritis in the Newly-born, and by Tweedy on Eclampsia.

Hanot describes two new cases of bronze diabetes—a rapidly-fatal form of diabetes with pigmentation. Cassoute has a long and interesting paper in the *Gazette des Hôpitaux* on Acetonæmia and Diabetic Coma, in which the treatment is fully discussed. Uranium nitrate, from a further experience in the hands of West, has proved very useful in diabetes, though in one case, apparently from a personal idiosyncrasy, the patient was unable to take full doses of the drug. Lisère records his experience in the use of pancreatic extract in diabetes. The results seem hopeful. Among the miscellaneous articles, valuable notes will be found on Bacteriuria and upon Oxaluria.

I.—ALBUMINURIA.

I. Prognosis in albuminuria.

The discussion on the prognosis in albuminuria in the Congrès Français de Médecine, August 6, 1896, was opened by M. X. Arnozan. He spoke of the necessity for precision in regard to the

prognosis and diagnosis in albuminuria, of the symptomological value of albuminuria, of the prognosis of nephritis in the course of infectious diseases, and of toxic nephritis. In the course of nephritis in infectious disease, he pointed out that in the event of improvement taking place the albumin and the organisms disappear simultaneously from the urine; if the albuminuria continued after the disappearance of the bacteria, this usually indicated that the case was passing into chronic kidney disease.

Cyclical albuminuria he held to be a distinct and remarkable clinical type. It was usually seen in the young. In the morning the urine was free from albumin. After rising, the albumin appeared and increased till four, five, or six in the evening, when it began to diminish, and by eight to ten o'clock had entirely disappeared. Neither digestion nor movement seemed to influence the onset of the albuminuria, but merely the upright position. With regard to the ætiology of the condition, there was much conflict of opinion. Some authorities held that it was the result of inherited retarded nutrition, others believed that it was consequent upon an attack of infectious disease, such as measles, influenza, scarlatina—that it has, in fact, the same ætiological factors as Bright's disease. In a case at present under Arnozan's care, in the evening, when the albumin was most abundant, streptococci were always found in large numbers; it was, in fact, a mild infectious nephritis consequent upon an attack of measles. Clinically the condition is, by most observers, regarded as benign, but Arnozan holds it to be a mild form of nephritis, able, little by little, to pass into grave Bright's disease. Many cases have, however, been observed which terminated favourably. *The cure of the disease is not certain, but it is possible, and it frequently occurs.* Favourable signs are found in recentness of the condition, smallness in the amount of albumin, and a short daily duration of the albuminuric stage. It was possible that the presence of nucleo-albumin was of better augury than the presence of serum albumin. The state of the general health was an important consideration. When neurasthenia or vaso-motor complications appeared the disease was serious, and usually passed into a chronic condition. Various other forms of albuminuria were discussed—cardiac albuminuria, albuminuria in conditions of auto-intoxication, in nervous diseases, in diabetes and in tuberculous affections, and albuminuria minima.

The discussion was continued by **Ch. Talamon**. Speaking of the elements to be considered in the prognosis in cases of albuminuria, he discussed first the quantity of the albumin. The only rule which could be laid down seemed to be that an

increased proportion of albumin co-existing with polyuria was always a grave sign. Diminution of the albumin, accompanied by polyuria, indicated an arrest of the inflammatory process. Intermittence of the albuminuria did not seem to have the value which some observers ascribed to it. A large proportion of albumin in a urine of pale colour, abundant in quantity, of low density, poor in urea, uric acid, and salts, always indicated a chronic nephritis with very grave prognosis. On the other hand, a small amount of albumin in a urine well coloured, small or medium in quantity, rich in urea or uric acid, always warranted an immediately good prognosis. Age is of importance: as a general rule, in an adult or a young man, the prognosis is much less grave than at any other time of life. It is an acknowledged fact that after fifty a chronic lesion of the kidneys shows no tendency to retrogression. Hypertrophy of the heart and arterial induration indicated an advancing renal atrophy. Prognosis in all forms of albuminuria was dominated by the fear of Bright's disease. Thus the albuminuria of scarlet fever may be absolutely cured, in spite of its immediate gravity, without any future evil effects. On the other hand, the albuminuria of gout or lead poisoning, though giving rise to no immediate danger, will leave persistent fears as regards its ultimate development into renal atrophy. To give absolute rules for prognosis it would be necessary first to solve the two following questions:— (1) How long may albuminuria exist in an individual with the appearance of good health without causing serious morbid troubles? (2) In a hundred cases of albuminuria, how many end in Bright's disease? At present it is not possible to answer these two questions in a satisfactory manner; it cannot, indeed, be done for some considerable time. For the moment we must confine ourselves to registering in each category of albuminuria the probabilities which increase or diminish the gravity of the prognosis.

Albuminuria present in febrile maladies simply translates the disturbance induced in the vaso-motor enervation of the kidney by the toxine which secretes the pathogenic agent. As a rule early febrile albuminuria disappears completely with the fever, but it may persist in a continuous or intermittent form, or it may become worse, or it may reappear as acute Bright's disease. The prognosis in secondary albuminuria in acute maladies is necessarily graver than in the initial form in simple febrile conditions. Cardiac albuminuria is the type of albuminuria from venous stasis. The so-called cardiac kidney, the large violet kidney, never ended, he considered, in the granular

contracted kidney. There was no time for the change to take place. In contrast to mitral conditions, the co-existence of albuminuria with aortic insufficiency is always a bad symptom, especially in a young subject. It is in this case, indeed, either the indication of a threatening asystole through the weakening of the myocardium or the proof of a concurrent nephritis. In the albuminuria of lead poisoning, which was at first, as a rule, intermittent or transitory, and more abundant during the crisis, age was an important factor in prognosis. In the first years of the lead intoxication in the young adult the prognosis was good as compared with the sufferer of forty to fifty years, when chronic changes had usually advanced in the kidney. A similar statement could be made in the case of gouty albuminuria. In gout, so long as the urine preserves the characteristics of richness in urea and uric acid, with a normal density and colouring matter, one can conclude that the lesion is either little extended or functionally compensated, and that there is no immediate or near accident to fear from the albuminuria. In diabetes the albuminuria is not in proportion to the intensity of the glycosuria, and may relieve, not only the diabetes, but the co-existing gouty condition of the blood. It is, therefore, a rather favourable sign, as indicating a possible gouty glycosuria, a less grave and more tractable form of glycosuria than that of true diabetes mellitus. In a hundred cases of tuberculosis taken at random, half at least show albumin in the urine. In most the prognosis is of the gravest. In the albuminuria of syphilis there may be present renal gumma, amyloid degeneration, or a slight or a severe form of nephritis during the secondary stage. Hereditary syphilis even may produce albuminuria. All these syphilitic albuminurias may be cured by mercurial treatment, and, as in other syphilitic lesions, the earlier the treatment is commenced, and the more recent the lesion, the better the prognosis. In albuminuria minima one point is important—the age of the patient. The presence of a trace of albumin in the urine of a young person has not the same importance as in riper years. A certain number of these cases is transitory; others, though persistent for years, may still be cured; but the remainder—and the number is considerable—constitute the first stage in Bright's disease.

For an albuminuria of Bright's disease to be considered completely cured it is essential—(1) That the albumin has completely disappeared; (2) that the excretion of water has returned to the normal; (3) that the excretion of the principal constituents of the urine reach and continue at the normal proportion; (4) that the heart be not hypertrophied; (5) that these conditions persist during several years.

It is possible for an albuminuria of Bright's disease to be cured, but absolute cure is extremely rare. As a rule, the cure is merely relative or functional. Can we tell precisely the duration of this functional cure, of this period of compensation or tolerance? That depends on the accuracy of the diagnosis. If one is justified in concluding the existence of granular contracted kidneys, one would not expect the survival of the patient for more than three or four years. If the diagnosis be that of large pale or amyloid kidney, the fatal termination can scarcely be retarded for more than five or six months.

2. Treatment of functional albuminuria.

Simon (*New York Med. Journ.*, September 14, 1895, p. 336) remarks that the treatment of the disorder is, on the whole, very successful, especially as regards the albuminuria, though the concurrent general symptoms, the lithuria and the oxaluria, may resist treatment for a long time. Diet is the most important element in the treatment. It must be rigidly enforced and of a nature to throw as little work as possible upon the kidneys, while at the same time combating excessive formation of uric and oxalic acid. The staple article of diet should be milk or, better still, *kephir*. Of milk, two to three pints should be taken in the twenty-four hours, while of *kephir*, one to two pints are sufficient, particularly if an additional pint of milk can be taken. Nourishment should be given five times daily. Of meats, white meats are alone allowed—*i.e.* fish, chicken, turkey and birds, sweetbread, calf's brain, crabs, oysters, frogs, and rabbits. Red meats proper are strictly interdicted. Of vegetables, spinach, oyster plant, parsnips, turnips, carrots, Brussels sprouts, white asparagus, etc., are allowed; of fruits, only stewed apples, prunes, pears and peaches. Coffee and tea are interdicted, and also alcohol as a general rule, unless the degree of prostration is very great, when a pint of good French red wine—such as Pontet, Canet, St. Estèphe, St. Julien, Médoc, etc.—may be taken at meal-times. Stale bread is permissible. As regards baths, the Turkish bath of ten minutes' duration, followed by a short process of shampooing, the needle bath and thirty to forty minutes of rest, once a week, and one ordinary warm full bath before retiring, two to three times a week, followed by coarse friction, seem to be especially serviceable. From cold baths the author has only seen deleterious effects. If anæmia exists, warm sea-water baths, which may be well taken at home, are of benefit. Eight to ten hours of undisturbed sleep are essential, and exercise should be taken daily, gradually increased as prostration diminishes, in the country and not in city air, for which purpose

a ride on horseback or on the bicycle once daily seems to be the most effective. As regards medication, very little or nothing is called for. Anæmia should, of course, be treated; nux vomica may be found useful. Of mineral waters, those containing lithia seem to be of most benefit; if these are not procurable, distilled water, with a little salt added, may be used.

[Kephir is a product of the alcoholic fermentation of milk, and has been for a long time in use in Russia, Germany, Switzerland, Italy, and Holland. The ferment used is known amongst the Tartars as the "millet of the Prophet." Kephir, when ready for use, has the consistency of a thin sour cream, a white colour, a pleasant sour-sweetish taste, slightly acrid. It effervesces from the presence of carbonic acid. A full account of its history, composition, manufacture, and action will be found in a paper by Spivak, *New York Med. Journ.*, January 18, 1896, p. 83.]

II.—NEPHRITIS.

3. Strontium lactate in nephritis.

Brouovski (*Journ. de Médecine de Paris*, March 10, 1896, p. 219) reports several observations on different forms of nephritis treated with lactate of strontium in doses of 90 grains and upwards per diem.

The patients, during the time of the observations, took no other medicinal agent, and were put on no special diet. Doses of 90 grains per diem were very well borne, but larger quantities were apt to cause nausea and vomiting.

In all the patients the author noted a diuresis, more or less marked according to the form of nephritis; it was especially marked in recent parenchymatous nephritis. After three to four days of the drug the urinary excretion increased to 3 or 4 litres (100 to 140 oz.). In mixed forms of nephritis the diuresis was not so marked. The quantity of albumin in the urine underwent very little change.

In the author's experience in experimental work on dogs the diuresis produced by lactate of strontium is the result of a direct action of the drug upon the renal tissue, and not through an action exerted upon the heart, the respiration, or the blood pressure.

Brouovski disagrees with Dujardin-Beaumetz, who thought that the only favourable action of strontium lactate on the kidneys was through the inhibition of intestinal putrefaction. Observations on bacterial growths have, however, shown Brouovski that the antiseptic power of lactate of strontium is very small; and further, estimation of the conjugate sulphates in the urine in

cases of nephritis has given almost identical results before and after the administration of the remedy.

[During the last few years considerable evidence has been brought forward in favour of lactate of strontium in the treatment of nephritis. Though it cannot be looked upon as an antinephritic remedy (as none such exists), still it is of considerable value, and is indicated in cases where a diuretic action is desired. It is best administered in solution. The white crystalline powder is very soluble, and can be given in a solution sweetened with glycerine.]

4. Nephritis in the newly born.

Jacobi (*New York Med. Journ.*, January 18, 1896, p. 65), in an address on nephritis in the newly-born, remarks on the frequency of nephritis accompanying acute diseases in the young subject. It is easy to obtain a specimen of urine, for catheterisation is more readily successful in the child than in many adults. Thus it will frequently happen that a nephritis is found where the prominent symptoms suggested the diagnosis of encephalitis or meningitis. In early life nephritis may be a primary disease, but it is frequently secondary, for example, in intestinal disorders. In the child the accumulation of septic matter in, and the absorption from, the interior of the intestines is rendered very easy. Other causes were to be found in infectious diseases, such as diphtheria, exposure to cold or to excessive heat. In three cases of nephritis, seen by the author within five weeks of birth, no ætiology, except that of long-continued asphyxia, could be elicited. Parenchymatous hæmorrhages are capable of causing inflammations of the kidneys in the newly-born. Such a case had occurred in the author's practice. An acute nephritis appeared in a delicate but healthy boy four years of age. None of the usual causes of the disease could be traced, and no indication of the cause could be found, till a crop of petechiæ appeared on the chest. Six months previously the child had suffered from purpura, but the kidneys were not then involved. The urine showed under the microscope a rather unusual amount of blood, together with blood and granular casts. The nephritis appeared to be due to disseminated renal hæmorrhages, and a favourable prognosis was given. In a few weeks the patient entirely recovered.

Frequent causes of nephritis in the newly-born are found in uric-acid infarctions. These may occur any time from before birth to the twenty-third day, and are of different varieties. In a part or in all of the uriniferous tubes are found *post mortem* yellowish-red or brownish spherical or angular bodies in such quantities as to form considerable deposits, and when discharged during life to

cause large stains of more or less solidity on the napkins. They consist of uric acid and ammonium urate, and in rare cases are accompanied with blood. This form of infarction may, by itself, result in a mild form of nephritis. The frequency of uric acid and other renal infarctions explains the large number of cases of gravel and stone in the young, though **Rosenstein** has advanced the contrary opinion, admitting, however, that he has once seen renal colic in the first year of life. **Jacobi** in forty *post mortem* examinations in young infants found renal calculus in six. Crystalline masses in the tubules of the kidney must produce a certain amount of irritation and inflammation. In regard to the dangers attending the presence of uric acid in the kidneys, the author had more to say on preventives than curatives. In the adult, efforts were directed to the solution of the deposits. Plenty of water, alkaline mineral waters, alkalies, mainly potassic salts, lithia, piperazine and lysidine were used. In the newly-born—in whom we must, as infarctions are the rule, expect the presence of the danger—nothing was, as a rule, done, though prevention was within easy reach. Water, if not the panacea, was certainly the indicated remedy, but in no period of life was it more withheld from the helpless creature than in the first few days. If water were given plentifully, and as methodically as syrup of figs or castor oil, much harm would be avoided. **Jacobi** had for long taught that the very young infant must be fed with greatly-diluted food. Since the time that under his directions the free use of water in the newly-born had been employed, he had observed few cases of gravel, dysuria and consequent nephritis.

[The conclusions of **Jacobi** in regard to the presence of uric-acid infarcts and uric acid in the urine of the newly-born agree with the observations of **Virchow**, **Bokai**, **Sutherland**, and the more recent conclusions of **Figueira** (*Lancet*, September 12, 1896, p. 738). The excretion of the uric acid is frequently accompanied with pain seated in any part of the urinary system or umbilical region, and may be piercing, like that seen in renal colic in the adult, and be accompanied by nausea and vomiting.]

5. Renal colic in infants.

At the meeting of the Royal Medical and Chirurgical Society, January 14, 1896, **R. A. Gibbons** contributed a paper on renal colic in infants. He gave details of cases in infants between nine and twenty-three months old, in which all the symptoms of renal colic were present. In none was a distinct calculus found, but in all there was abundance of free uric acid and masses of mortar-like material, consisting of uric acid. The condition was rarely met with in the children of the poor, but in children whose

parents were in good circumstances, and where there was a gouty history. The author thought that such cases had formerly been considered severe cases of intestinal colic. The points worthy of note in the condition were—(1) That the onset was sudden; (2) that before the attack the child seemed to be in good health; (3) that all the signs and symptoms of acute renal colic were present; (4) that all the cases occurred in infants whose parents showed a gouty history.

6. Renal colic.

In the *Journ. des Praticiens*, January 11, 1896, the use of a large poultice to the lumbar region or abdominal walls is advised in cases of renal colic. Full doses of opium should be given by the mouth or rectum. Hypodermics should be avoided on account of the danger of the patient learning the use of the hypodermic syringe. The following suppository has been found useful:—

R	Extr. Belladonnæ	...	...	gr. $\frac{1}{3}$
	Extr. Opii	...	...	gr. $\frac{1}{3}$
	Cacao Butter	...	...	gr. xlv.

Antipyrin in full doses by the mouth may do good; given hypodermically, it is apt to produce severe pain.

Chloral by the rectum produces nervous quiet and permits sleep. Thus:—

R	Chloral Hydratis	...	...	gr. xxx.
	Vini Opii	...	...	℥ x.
	Decoction of Marshmallow			$\frac{3}{4}$ iv.

The enema should be given warm.

Hot baths and chloroform inhalations (as in midwifery) may be found useful.

[The doses of opium in both prescriptions seem to be too small. The danger of using the hypodermic, in most patients, seems to be counteracted by the benefit obtained from the rapid and certain action.]

7. The internal administration of kidney extract in kidney disease.

Schiperowitsch (*Russ. med. Liter. Beilage zur St. Petersburg med. Woch.*, No. 2, 1896) records a number of observations on healthy people to whom he gave a course of pigs' and sheep's kidneys as food by the mouth, or injected sterilised extract. Except for a slight increase in the amount of the urine, no noticeable change took place. The same observation was then repeated on cases of acute and chronic parenchymatous nephritis, cirrhotic kidney, and amyloid degeneration of the kidney. From his observations he concludes that the treatment produced an increase in the amount

of urine, a diminution in the amount of albumin, tube casts, etc., and a disappearance of all uræmic symptoms.

[It is difficult to accept the author's results. Though the treatment is founded on an altogether false analogy, it has been tried before. In the *Lyon Médical*, No. 17, 1894, **Teissier** and **Frenkel** give an account of a similar research undertaken at the request of the late Professor Brown-Séquard. Their results in many particulars disagree with those of Schiperowitsch. They obtained no diuretic action either in man or in animals. They concluded, however, that from the altered uro-toxicity there was an augmented power of elimination of waste substances by the kidney. They think that the feelings of relief experienced by the patient, and the harmlessness of the injections, justify their use in nephritis. The feeling of relief must, we fear, be in these cases put down to a purely psychical cause. The administration of a *secretory* gland in certain diseases is supported by analogy and pharmacological knowledge, but the same cannot be said to apply to the administration of an *excretory* gland.]

8. Eclampsia.

E. Hastings Tweedy (*Dublin Med. Journ.*, March, 1896, p. 206) contributes an interesting and suggestive paper on the treatment of eclampsia. He believes that the toxin causing the convulsions is similar to the toxin of uræmia, and that the "so-called kidney of pregnancy" differs in no way from the degenerated kidney seen under many other circumstances. Eclampsia is rare in chronic nephritis, for endometritis is, as a rule, present, giving rise to sterility or early abortion.

He is strongly against the use of chloroform, chloral hydrate, or bromide of potassium in the treatment of the condition. All these drugs, acting as powerful cardio-depressants, kill in a precisely similar manner to the eclamptic poison—by heart failure and œdema of the lungs. Much reliance has been placed on getting the skin to act vigorously; but it cannot be claimed that this plan is at all times easy in its accomplishment, very certain in its good effects, or even safe in its application, always some depression, and occasionally alarming collapse, following its use.

In Tweedy's opinion, no more fatal drug could be found than pilocarpine, depressing the heart, promoting free salivation and bronchial secretion.

Efforts to give nourishment, drugs, or stimulants by the mouth are to be emphatically condemned. The power to swallow is, as a rule, in abeyance, and fluids find a much easier entrance into the lungs than into the stomach. The so-called œdema of the lungs, seen with such frequency in fatal cases, is largely to be attributed

to fluids which have reached them from the mouth. Position has thus an important bearing in the proper treatment of these cases. The position of the patient should never be dorsal. The gag, as sometimes recommended, is fruitful of harm, for the act of swallowing cannot be accomplished with the teeth and lips apart. Any nourishment and stimulants given must be by the nose tube or, better, by the rectum. The bowels must be kept freely open. After three years' experience of its use, Tweedy recommends the hypodermic injection of morphia, beginning with the injection of $\frac{1}{2}$ grain, followed in two hours by $\frac{1}{4}$ grain, and so on till the symptoms are alleviated, or until 2 grains have been given in twenty-four hours. The drug seems to have little effect on the heart or kidneys. No other drug has as great an inhibiting effect on metabolic changes; it is a nervous sedative and diminishes salivary and bronchial secretions, and from these various actions counteracting those conditions which tend to kill in eclampsia.

Tweedy entirely agrees with the views of Sir John Williams ("Year-Book," 1896, p. 105) as to the value of blood-letting. In conclusion it is suggested that it is possibly attention to small details not considered worth recording that enables some practitioners to show results immeasurably superior to others, though both may pursue a similar line of treatment.

[The views of Tweedy on the use of pilocarpine are in line with the experience of most practical physicians. By all it is regarded as a drug to be used with great caution. Many have entirely abandoned its use. Venesection, on the other hand, is supported by a rational hypothesis and by clinical experience. Some observers advocate the bleeding of a patient into her own veins, as the use of *veratrum viride* has been styled. Of its use **Peyma** remarks (*American Medico-Surgical Bulletin*, February 8, 1896), from considerable experience, that, though he had never seen convulsions continue after the pulse had been brought down to 60 per minute, "yet, notwithstanding this, the patient frequently dies." The treatment, therefore, though satisfactory as regards the convulsions, does not seem to give a desirable general result. The results with morphia are remarkable, and are similar to those got by **Veit** and by **Washburn** ("Year-Book," 1893, p. 135). Morphia relieves spasm and reflex irritability. The pulse, at first accelerated, afterwards becomes reduced in frequency, with increased fulness, and the blood pressure is raised. The dose recommended by Tweedy, while suitable for a case of eclampsia, is much in excess of what can be with safety used in a case of uræmia.]

9. Surgical treatment of nephritis.

Harrison (*Lancet*, January 4, 1896, pp. 19, 20) advocates incision into the kidneys in cases where there is evidence of increased tension in the organ. He reports three cases where on exploration for calculus, etc., the organ was found to be markedly congested. An incision was made into the organ and drainage effected by the lumbar wound. In the cases quoted the organ was found congested and the capsule very tense. The urine, which had been albuminous before operation, became normal afterwards, and the patients made an uninterrupted recovery. The author considers that no risk is incurred in the operation, and that it is justified in cases where the recuperative power of kidneys suffering from nephritis is overweighted. When after an attack of nephritis the albumen is not disappearing, and there is a prospect of permanent damage to the kidneys, a trial of this expedient may be undertaken without adding to the gravity of the circumstances.

[The proceeding is not one that could be recommended in many cases of nephritis. Cases are frequently met with in practice that seem to hang fire, as it were, a certain amount of albumin remaining in the urine along with the general anæmic condition, and yet an ultimate recovery may take place. Can the surgeon give the physician a definite opinion on the proper time to cut into an inflamed organ? The present teaching seems to be that the earlier the incision is made the better; but such a principle could scarcely be applied to the kidney in the present state of our knowledge. Again, if we delay till the acutely inflammatory stage is over, will incision be likely to do good to many cases?]

10. Cantharides in relation to kidney disease.

Du Cazal (*Gazette Hebdomadaire de Méd. et de Chir.*, October 26, 1895), being struck with the results of Lancereaux in the treatment of nephritis by the internal administration of tincture of cantharides, tried the treatment in five cases, three of which were of the acute form of parenchymatous nephritis and two scarlatinal in origin. In four of the five cases he was surprised at the rapidity of the recovery. In contrast to this, Huchard (*Progrès Médical*, 1896, No. 12) recounts the case of a young girl who came under treatment for an epigastric pain. As the urine appeared to be normal, a fly blister was ordered 6 c.m. large. Alarming symptoms developed—pain in the back, dyspnœa, vomiting, headache, cramps, amaurosis, almost complete anuria with intense albuminuria—in fact, all the symptoms of an acute attack of uræmia. By energetic

treatment the symptoms were ameliorated. The author declares his intention of avoiding cantharides as a vesicant in the future.

[It is difficult to reconcile Du Cazal's treatment, especially in acute nephritis, with the record of such a case as is presented by Huchard. The effects of cantharides on the kidneys have been most carefully worked out by many observers (*Practitioner*, 1881, 1882, 1884), and these results would lead most clinicians to avoid the use of cantharides as a dangerous poison, especially in acute nephritis.]

11. The presence of uric acid in the blood in nephritis.

Prof. v. Jaksch (*Centralblatt für inn. Med.*, No. 21, May 23, 1896, p. 545) gives an account of a further research on the blood in eight cases of nephritis. The second case is noteworthy. The blood examined during an attack of uræmia showed a large amount of uric acid; some weeks later, when the uræmic symptoms had disappeared, the uric acid was found only in traces. From this it may be concluded that during the uræmic attack uric acid was retained in the blood.

From his observations he concludes that there can be no doubt that uric acid is present in the blood in cases of nephritis.

[These results obtained by v. Jaksch differ from those of Kolisch and Dostal and of Fodor, who conclude that, though the uric-acid excretion in the urine undergoes a certain diminution, the other nitrogenous extractives are increased, and that the blood fails to show any excess of uric acid. The question, therefore, must still be considered as *sub judice*, though the results of v. Jaksch seem very weighty evidence in favour of his contention.]

12. Albumosuria in chronic kidney disease.

Gillespie (*Lancet*, July 11, 1896) considers the question of albumosuria in chronic kidney disease. He points out that, as far as present knowledge goes, peptonuria and some forms of albumosuria occur when there is either well-marked suppuration or rapid disintegration of proteid material in the body. Thus albumosuria has been found in osteomalacia, dermatitis, mental derangement, measles and scarlet fever.

The first case quoted was that of a lady suffering from symptoms of congestion of the liver—nausea, headache, and quivering objects before her eyes. The face was puffy, the pulse inelastic, the sight was weak, and insomnia was present. Hæmorrhagic retinitis was found in the left eye. The urine showed a specific gravity of 1,022, and contained 9 per cent. of

urea. There was no albumen present in the urine, but on careful examination the presence of deutero-albumose, and possibly some peptone, was demonstrated. A diuretic mixture, containing acetate of potash, lactate of strontium, and decoction of broom tops, was prescribed, along with milk diet. Rapid improvement followed. The second patient suffered from albuminuria and weakness. Save the albuminuria, no symptoms of kidney disease were present. An attack of right-sided hemiplegia supervened. The urine showed the presence of a small amount of albumin, dys-albumose, hetero-albumose, proto-albumose, and deutero-albumose. Treated by Kolisch and Buriau's method, no trace of hyston could be discovered.

The author points out that in neither of the cases was there any possibility of pus being present in any part of the body. The only possible solution of the presence of the proteoses in the urine might be found in an excessive production of leucocytes and a consequent increased destruction of these cells in the blood. But further research seems necessary before it can be said that leucocytes and albumosuria are related to one another; or whether albumosuria, as in the cases cited, is of as grave significance as the presence of coagulable proteids in the urine.

[It is extremely doubtful if, as the author states, the presence of albumoses must be regarded "as evidence of some kidney affection." If from any cause, such as the destruction of proteid material or suppuration, albumoses be present in the circulation, the kidneys would be expected to treat them as a foreign body and excrete them. In the same way, drugs or egg albumin, if present in the circulation, will be excreted by the kidneys.]

III.—DIABETES.

13. "Bronze diabetes."

V. Hanot (*Wiener medizinische Blätter*, No. 7, 1896, p. 101), along with Chauffard, in 1882 described a disease in which two different morbid conditions were present, namely, diabetes and hypertrophic cirrhosis of the liver with pigmentation. In a second series of cases the hypertrophy of the liver was absent, but the pigmentation was very marked. He considered the pigmentary cirrhosis a result of the diabetes, and that under the influence of glycosuria and hindered circulation in the liver through diabetic endarteritis, the hepatic cells (as the result of stimulation) produce an increased quantity of colouring matter, and become the seat of pigmentary hypergenesis. The pigment thus developed in the liver is carried through the whole organism and deposited as

minute emboli. Since those observations many authors have discussed the disease.

Letulle disagrees with Hanot and Chauffard. He does not admit the hypergenic action of the liver cells, as those which contain most pigment appear to be dead cells. He considers that the cells store it rather than form it, and that the pigment found in other organs is formed *in situ*, from a reduction of hæmoglobin, and not in the liver. Other observers have considered the hepatic cirrhosis as the primary disease, and the pigmentary degeneration as secondary. Moosé considers that the pigmentary impregnation is a secondary phenomenon, and that the embolic process has only a restricted part as a causal factor of the general melanosis, the pigment developing in the vessel at the expense of the altered hæmoglobin.

Hanot records two new cases: one in an alcoholic. Up to the time he saw the patients, their health had only been affected for a month at most. The urine already contained sugar. In the alcoholic patient the liver was enlarged, extending two fingers' breadths beyond the margin of the ribs; in the other the liver was normal. While under observation liver hypertrophy, melanoderma, and cachexia rapidly developed, all of which may be considered as equally important consequences of one and the same cause. Hepatic cirrhosis in "bronze diabetes" is a vascular and, generally, a hypertrophic cirrhosis. Moderate ascites is usually present, the spleen is enlarged. The pigment in the tissues contains iron, thus differing from the pigment in Addison's disease, and melanin pigment. The pigment in melanotic sarcoma is soluble in potash, thus differing from the ochre pigment under discussion, which is insoluble in potash.

The symptoms of the disease consist of the general signs of diabetes, with abundant glycosuria, of melanoderma, most marked upon the face, limbs, and genital organs, hypertrophic liver cirrhosis, splenic enlargement, slight ascites and distension of the abdominal cutaneous veins.

The disease has a rapid course: wasting, diarrhoea, œdema of the lower limbs, soon appear, loss of strength rapidly ensues, and death takes place usually from coma, septic pneumonia or diabetic gangrene. The author considers that, though the pathogenesis is not yet definitely proved, yet the disease must be considered a distinct morbid entity and may now be placed on the list of definite diseases.

14. Acetonæmia and diabetic coma.

E. Cassoute (*Gazette des Hôpitaux*, 1896, No. 14, p. 127) contributes an exhaustive and interesting paper on acetonæmia and

diabetic coma. Prophylactic treatment, he considers, is founded on two principles: to combat the causes which increase the accumulation of toxic products, and to favour the elimination of these products. Diabetic coma appears to result from auto-intoxication. The elimination of toxic products is increased by diuretics, by the administration of digitalis in small doses, if the heart's action be weak, and by the intestinal canal (drastic purgatives). With regard to the treatment of symptoms, inhalations of oxygen are prescribed as a respiratory stimulant, but are of little value for dyspnœa, which is relieved only when the general intoxication diminishes. For the loss of appetite and distaste for food, good results are got with bitters, such as calumba, nux vomica, cinchona, and diuretic wine.

The condition of the alimentary canal should be watched. If depression, torpor, and somnolence supervene, sedatives such as bromide, antipyrin, and especially opium, should be avoided. Attempts have been made in the past to combat the toxæmia and the dehydration of the tissues. **Lecorché**, **Hilton Fagge**, and **Kussmaul** have tried transfusion of blood without success. To give the tissues the water lost, to produce as it were a lavage of the organism, and to increase diuresis, the injection of saline solution into the tissues has been used. As much as 500 to 600 grammes of liquid has been introduced in the course of half an hour. The results as regards the coma were not satisfactory. The study of diabetic coma in the last few years seems to show that there is diminished alkalinity of the blood, and a poisoning by acids resulting in incomplete oxidation of sugar. The idea of administering large doses of alkalies is the natural outcome of this. Administration by the stomach seems insufficient to deal with the condition, hence alkaline intravenous injections have been tried. **Stadelmann**, the first to use the injections, administered a solution of chloride of sodium, 6 parts per thousand with 30 per cent. bicarbonate of soda added. **Minkowski** and **Dickinson** have followed his example, but the results obtained have not been good. The treatment was continued by **Lépine** in 1887, who used a solution containing 8 grammes of chloride of sodium and 34 grammes of bicarbonate of sodium dissolved in 1,500 c.c. sterilised water. **Rogue**, **Devie**, **Hugounenq**, repeated these injections. They decide in favour of the treatment, stating that saturation of the acids in the economy is produced and their destruction and elimination are favoured.

[The administration of alkaline fluids by the mouth in large quantity has long been used in diabetic coma. **Reynolds** ("Year-Book of Treatment," 1893, p. 143) obtained very

satisfactory results in *impending* coma by the administration of enormous quantities of fluid, and a mixture containing citrate of potash. If possible, absorption by the stomach is to be recommended rather than intravenous injection, which should be used only if coma has supervened.]

15. Uranium nitrate in diabetes mellitus.

Samuel West (Meeting of the British Medical Association, Carlisle, July 30, 1896) gives his further experience of the use of uranium nitrate in diabetes. He finds that the effects of the drug are—(1) to diminish the thirst; (2) to reduce the amount of sugar passed; (3) to reduce the percentage of sugar. The favourable influence, however, was not equal in all cases. The results were not so striking as those recorded last year (“Year-Book of Treatment,” 1896, p. 112. *Brit. Med. Journ.*, August 24, 1895). Five cases are recorded. Before administering the drug the patient was put upon a regulated diet, and the sugar excretion estimated. When the sugar excretion seemed to have arrived at an equilibrium, the drug was administered. In four of the cases beneficial results were obtained, the total and percentage amount of sugar in the urine being considerably reduced after the administration of the drug. In the fifth case the drug did not prove a success, the patient being unable to take more than 3 grains twice daily, and the administration ultimately had to be abandoned on account of gastric disturbance.

[From further experience uranium nitrate seems to be a drug which will prove of considerable value in diabetes mellitus, especially in those cases where the sugar excretion is influenced by regulation of the diet. The drug is administered in *very* dilute watery solutions, 1 to 2 grains being given thrice daily *after* food, the dose being gradually increased to 10 or even 20 grains thrice daily.]

16. The treatment of diabetes mellitus with lime salts.

Grube (*Therap. Monats.*, May, 1896) gives a further account of his results with lime salts in diabetes. (See “Year-Book,” 1896, p. 114.) Fourteen new observations are given. The influence on the sugar excretion is *nil*, but the general condition of the patient is said to be greatly ameliorated in the course of the treatment, and an increase in weight is noted. Of the fourteen cases, three are described as a grave form of diabetes in young subjects; it was in these cases especially that good results were obtained. The patients seemed to enjoy good general health after the absorption of the lime salts, in spite of a serious glycosuria complicated by acetonæmia. The three patients gained

in weight 9, 5, and 3 kilogrammes respectively in the course of the treatment.

The eleven cases of mild diabetes were not greatly benefited by the treatment.

[It has long been recognised that an excessive excretion of lime salts is one of the features in diabetes. Their administration thus supplies an important requirement. Lime salts can, however, have little or no curative influence on the disease.]

17. The treatment of diabetes by injection of pancreatic extract.

Lisère (*Revue de Thérap.*, March 1, 1896, p. 271) from the treatment of cases of diabetes by injection of pancreatic extract concluded—(1) That the injections diminished the quantity of sugar in the urine. (2) On ceasing the treatment, the quantity of sugar in the urine again increased. (3) The injections improved the general condition of the patient; the weight increased, the thirst and appetite diminished.

The injections were prepared in the following way:—A cow's pancreas, finely hashed, was macerated for twenty-four hours in a solution of chloride of sodium. Equal parts by weight of the solution of sodium and pancreas were used. Eighty to a hundred grammes of this infusion were taken, and 2 grammes of bicarbonate of sodium added. Before the fluid is introduced it is slowly warmed. The patient receives two injections per diem.

[The method of treatment of diabetes mellitus by the injection of pancreatic extract seems to be founded on a sound basis of analogy. In experimental work on artificially induced diabetes in animals it has been demonstrated that the injection of pancreatic extract or emulsion caused a disappearance of the symptoms. Again, the results of Torup, of Christiania (Jones, *Med. Record*, No. 21, 1896), seem to show that a glycolytic ferment can be obtained from the pancreas which, when injected into an animal rendered diabetic, has the power of keeping the disease in abeyance. Battisini (*Centralblatt für innere Medicin*, 1894, p. 183) obtained good results in two patients to whom he administered a glycerine emulsion. No good effects, however, have been obtained by administering pancreatic extract or emulsion by the mouth, as the ferment appears to be destroyed in the stomach, probably by the hydrochloric acid. The sterilised extract or emulsion must be administered hypodermically. The extract should be injected deeply into the muscles, and not directly into a vein, for fear of producing intravascular coagulations.]

18. A food for diabetics.

Ringer (*Brit. Med. Journ.*, 1895, ii., p. 1412) advises the use of a modified milk in diabetes. He gives the following directions for its preparation:—A pint and a half of milk is taken, and to this is added 90 cubic centimetres of a 10 per cent. solution of acetic acid. This precipitates a curd—caseinogen. The curd is allowed to settle, the clear fluid siphoned off, and the curd filtered and washed with distilled water. The curd is then rubbed up in a mortar with some calcium carbonate and water added. The caseinogen becomes dissolved, the calcium carbonate soon settles, and the milky fluid can be decanted. The dissolved caseinogen closely resembles milk in its reactions. If rennet and a calcium salt be added, and the mixture heated to 40° C., it quickly clots, the caseinogen becomes changed into casein, which precipitates by combining with the calcium salts. The caseinogen separates better if, before adding the acetic acid, the milk be diluted. On the addition of 2 per cent. of glycerine to the caseinogen mixture, a not unpalatable form of milk is produced.

19. Diabetes insipidus treated by electrification of the medulla oblongata—Recovery.

Robertson (*Brit. Med. Journ.*, October 10, 1896, p. 1020) records a case of diabetes insipidus due to disease of the floor of the fourth ventricle, which was treated by electrification. The patient, a man aged thirty-three years, had been a soldier and had suffered from syphilis. When he first came under treatment the polyuria was of six months' standing, and he had lost 2 st. 9 lb. in weight. The urine presented the usual phenomena. There was partial and permanent paralysis of the right side of the face, and a temporary loss of power of the left arm and leg, temporarily impaired articulation, unilateral facial flushings, and pain in the occipital region. The lesion seemed to be localised in the pons and vaso-motor centre in the medulla. Treatment by iodide of potassium, mercury, etc., producing no benefit, voltaic electricity was tried. The positive pole was applied to the back of the head and neck by a large electrode, and the negative, duly insulated to within a quarter of an inch of the point, was passed along the floor of the nostril till it rested on the cervical spine. The strength of the current was gradually increased from a half to five milliampères, and the duration of application from one to five minutes. Under the treatment the urine gradually diminished in quantity, the specific gravity at the same time rising, and all the other symptoms disappeared, with the exception of the paralysis of the right side of the face. A recurrence of the

disease took place about six years after the first attack, but under similar treatment the symptoms disappeared in a fortnight.

20. The action of reputed antidiabetic remedies on phlorizin glycosuria.

F. Coolet (*Arch. de Pharmacodynamie*, ii., fasc. 3-4, p. 255) gives an account of a research on the influence of antidiabetic remedies on glycosuria induced by phlorizin. He chose from amongst the remedies used in the last fifty years those which had retained the greatest reputation. Amongst these were alkalies (chloride of sodium, carbonate of sodium, sulphate of sodium, and Carlsbad salts), arsenic, bromide of potassium, glycerine, salicylate of sodium, antipyrin, piperazine, opium, and jambul. In all the observations, as nearly as possible, the same type of glycosuria was produced and the same dose of phlorizin injected. Amongst the drugs exhibited there were some which diminished decidedly both the percentage of sugar in the urine and the total amount eliminated during their administration. These were especially antipyrin and glycerine, in less degree salicylate of soda, jambul, piperazine, and bromide of potash. The antiglycosuric action of antipyrin was especially marked. Some of the drugs—for example, opium—instead of diminishing seemed to augment the glycosuria.

[The results are striking, and are a timely warning against conclusions too hastily drawn from experimental work alone.]

21. Association of psoriasis with diabetes mellitus.

Karl Grube (*Clin. Soc. Trans.*, vol. xxviii., p. 156) gives an account of four cases illustrating the co-existence of psoriasis and diabetes mellitus. In his experience he had met with only five instances out of about 200 cases of diabetes, and very few examples were to be found in the literature of the subject.

The first case—a gentleman, aged thirty-nine, whose father and sister had died of diabetes—had suffered from psoriasis since boyhood. Three years before he came under observation diabetes was discovered, and from that time there was a great increase in the intensity of the psoriasis. Under treatment the psoriasis improved, but the diabetic symptoms became more pronounced, and he died of coma. On *post-mortem* examination only secondary changes were found in the nervous system, and the pancreas showed no signs of disease.

The second case, a brother of the first, thirty years of age, also suffered from psoriasis and diabetes. He developed a severe form of diabetes. As the diabetic symptoms increased in gravity, the psoriasis improved.

The third case, a gentleman aged forty, suffered from severe

diabetes. Psoriasis had existed for many years, and had been very troublesome till the diabetes appeared, when considerable improvement took place.

The fourth case, a gentleman fifty-five years of age, showed the same relations. When the diabetes improved under treatment at Neuenahr, the psoriasis became very much aggravated.

The author considers that these cases justify the assumption that there is a close relation between the two diseases, and that the combination is not a mere coincidence.

22. Modification of the picric acid test for sugar.

McDonald (*Lancet*, September 19, 1896, p. 814) gives a modification of the picric acid test for sugar, which is rapid and does not react to uric acid and kreatinin. Picric acid does not react to uric acid, and by using a very dilute boiling solution of potassium picrate, the kreatinin reaction is eliminated. He has used the test in a long series of cases, and confirmed the result with the phenyl-hydrazin test. The test proved rapid and satisfactory. The presence of $\frac{1}{2}$ grain of sugar in an ounce of urine could be demonstrated in a minute or two. To perform the test, take, in a test tube, 3ss urine, 3ss saturated solution of picric acid, xv. m liquor potassæ, and about 3ix. water. The mixture is then heated uniformly, just short of boiling. The upper half is then boiled for one to two minutes. At first the colour disappears in great part (kreatinin reaction), but if sugar be present the colour darkens again as the boiling process is continued. In normal urine the colour does not return, however prolonged the boiling may be. The presence of albumin does not interfere with the test. If a negative result is obtained, sugar is not present in sufficient quantity to be of any pathological importance. If the reaction is obtained, some abnormal reducing agent is present, and if any doubt arise as to the nature of the reducing agent, the phenyl-hydrazin test may be applied.

23. Sugar reaction in the urine after the administration of sulphonal.

Lafan (*Monatsschr. für Unfallheilk.*, 1896, No. 1) finds that the urine of patients who have taken sulphonal gives, on boiling with Fehling's solution, a decided precipitate of copper oxide. On polarisation, however, there is no deflection to the right.

24. A simple method of distinguishing diabetic from non-diabetic blood.

At the annual meeting of the British Medical Association at Carlisle, July, 1896, R. T. Williamson gave an account of a method of distinguishing diabetic blood based on the observation that diabetic blood has a much greater power of removing the

colour from a solution of methyl blue than non-diabetic blood. The reaction is so sensitive that the difference can be detected by the examination of a drop of blood obtained by pricking the finger. A narrow test tube is taken, and into it are placed 40 cubic millimetres of water, which may be measured with the capillary tube of a Gowers's hæmoglobinometer. To this are added 20 cubic millimetres of blood, 1 cubic centimetre of a 1 in 6,000 watery solution of methyl blue, and 40 cubic millimetres of liquor potassæ. The tube is then placed in a capsule or vessel containing water, which is kept boiling. At the end of four minutes the blue colour disappears, and the fluid becomes yellow, if diabetic blood has been used; but in the case of non-diabetic blood the colour remains.

The author has tested the method of examination in five cases of diabetes, and 100 cases of patients suffering from various diseases. In diabetes the solution was always discoloured, while in no other condition did the reaction appear.

IV.—DIURETICS.

25. Diuretic action of theobromine in cardiac and renal diseases.

Huchard (*Revue de Thérap.*, 1896, p. 67), working with theobromine, concludes from a number of observations which are given in detail—(1) That it is one of the best, most reliable and most constant diuretics which we possess for the treatment of anasarca or œdema in renal or cardiac affections. (2) That it belongs to the class of diuretics that act directly upon renal epithelium, stimulating, without in any way altering, its action. It is, however, still doubtful if the diuresis is accompanied by an increase in the amount of albumin. (3) That it acts especially in cardiac cases where there is arterial and renal sclerosis, in all valvular diseases complicated with albuminuria, where cardiac failure is present, and in interstitial and parenchymatous nephritis. (4) That the combination of digitaline, caffeine, and theobromine does not increase the diuretic effect. (5) That to prolong the diuretic action of theobromine after its administration digitaline is useful. (6) That the diuretic action is rapidly produced, appearing during the first day of its administration, having thus an advantage over digitalis. It persists two to four days after the last administration. The drug has no cumulative effects, shows little toxic effects, producing rarely—after large doses, in susceptible subjects—headache, a certain amount of nausea and vomiting, very rarely cerebral excitement. (7) That,

compared to the diuresis of digitalis and caffeine, the diuresis of theobromine is more rapid and more abundant. (8) That it succeeds in cases where both digitalis and caffeine have failed. (9) That the dosage should be 30 to 45 grains per diem, given in cachets containing 7 to 8 grains; larger doses of 60-75 grains may prove disagreeable, even dangerous. To obtain a diuretic action, it is best to give eight cachets on the first day, six on the second and third, and four on the fourth. It is sometimes of value to add to each cachet an equal quantity of neutral phosphate of sodium.

26. The diuretic action of lithium salts.

Mendelsohn (*Deutsch. med. Wochenschr.*, September 30, 1896, p. 861), from clinical and experimental observations, concludes that the beneficial action of certain mineral waters, such as Carlsbad, Fachingen, etc., depends not only on their reputed property of uric-acid solvents, but also on their diuretic action. He finds that the different lithium salts possess a diuretic action of varying strength. The most effective diuretic action is obtained with lithium citrate. The second best is lithium acetate, which can be easily prepared from the carbonate. An additional advantage of the acetate is that its taste can be easily masked. An average dose of the citrate or acetate is 8 grains three to four times daily.

27. Diuretin.

Askanazy (*Deutsch. Arch. für klin. Med.*, Bd. 56, No. 3-4, p. 209) contributes detailed observations on diuretin Knoll. He finds that the diuretic action is most constant and marked in chronic nephritis. The maximum dose of 45-60 grains should not be exceeded, or alarming symptoms of collapse may supervene.

[The results of Askanazy are in opposition to those of some previous observers (see "Year-Book," 1892, p. 173; 1893, p. 152), some stating that diuretin is most useful in acute nephritis. The exact value of the drug as a diuretic in different cases seems still a vexed question.]

V.—MISCELLANEOUS.

28. The treatment of bacteriuria by the internal administration of drugs.

G. Lovell Gulland (*Edin. Hospital Reports*, vol. iv., p. 294) contributes a highly interesting and instructive paper on the treatment of bacteriuria. He points out that the urinary passages from the deep urethra to the kidney never harbour organisms in health, while the urethra invariably contains organisms, pathogenic

and pyogenic, which live on the surface, between the epithelial cells and in the ducts of the mucous glands. The urethra cannot be rendered sterile unless irrigation is carried to such an extent as seriously to irritate the mucous membrane.

In a case of cystitis, after it has passed the initial inflammatory stage, the mucous membrane is covered with a layer of adhesive muco-pus, and it is from this that the bacteria are supplied to the urine. As the rate of supply of the organisms is equal to, or in excess of, the rate of removal, spontaneous cure cannot be looked for. It is then that washing out the bladder or instillation give good results in many cases. If this, from any reason, is not practicable, we must have recourse to internal remedies. In the pre-bacterial days, alkaline cystitis was alone recognised; drugs were used, such as the benzoates of soda or ammonia, to alter the reaction of the urine. Now, in cases of acid cystitis, where the urine, though containing little pus, may show thousands of bacteria in a single drop, antiseptic agents are employed. If these remedies were excreted by the kidney in the same form and quantity as they were ingested, there would be little difficulty in securing antisepsis of the urinary tract. It would then be necessary merely to find out the amount of urine the patient was passing, and arrange the time and amount of the drug, so that the amount in the urine might never fall below the antiseptic minimum. Unfortunately this is impossible of realisation. Thus, in the case of salicylic acid, its minimum antiseptic equivalent is 1 in 1,000, that is, the proportion which will interfere with the development of organisms in a fluid. If the patient take 100 grains, the amount excreted in the urine will be 60 grains. If the patient is passing 50 ounces of urine, that would give 1 in 400, which is not only antiseptic, but is above the solubility of salicylic acid in water. But before its absorption, or immediately afterwards, the acid would be converted into various salicylates, and would be excreted as salicylates and salicylurates. The salicylates, however, are very feeble antiseptics, and would have no antiseptic action at all on any organisms in the proportion in which they would be excreted in the urine (1 in 400). The same holds good of benzoic acid, which, excreted as hippurates, has a very feeble antiseptic action. Salol, the drug which is most often used, breaks up in the intestine into salicylic acid and phenol. The phenol is excreted as phenyl-sulphate of potassium, which is not highly antiseptic, and the salicylic acid as above. The great advantage of salol is the entire absence of gastric irritation during its administration. Sandal wood, copaiba, and cubebs, so frequently given in gonorrhœa, are so feebly antiseptic that a needleful of typhoid bacilli has to

be immersed in sandalwood oil for twelve hours, and in copaiba for twenty-four hours, before the organisms are killed. When one remembers that the expulsion of 12 ounces of urine lasts from twenty to twenty-five seconds, one can realise that even if the solution were a very strongly antiseptic one it would have little chance of destroying organisms lodged in the mucous membrane. The benefit derived from the use of the oils is probably through their diuretic and stimulating action. The author thought it possible that the known benefit derived from all the remedies mentioned might be found partly in their power of altering the reaction of the urine from acid to alkaline, and partly—though they could not destroy the organisms—by preventing the secretion of their toxic products or neutralising those products when formed.

In Gulland's experience, salol was the most useful drug to employ in bacteriuria. If salol, given in doses of 30 to 40 grammes in the day, did not make an alkaline urine acid after two or three days, at most, there was likely to be some derangement of the stomach, probably deficient acidity, which would require to be treated before continuing the salol administration.

29. Oxaluria.

J. C. Dunlop (*Journ. of Path. and Bacter.*, January, 1896) gives a detailed account of a research on the excretion of oxalic acid in the urine. He devised a new method of estimation, using alcohol as the precipitant, and applied it to the physiological excretion and certain experimental procedures. The principal conclusions arrived at were:—(1) That oxalic acid is a constant constituent in the urine of men eating an ordinary diet ; (2) that in urine there is always an excess of calcium tending to precipitate oxalic acid, but that this precipitation is in the majority of urines prevented by the presence of acid phosphate of sodium ; (3) that the precipitation is most liable to occur when the percentage of oxalic acid is comparatively high, and that it occurs in about one out of every three *healthy* urines ; (4) that the previous methods of estimation are faulty ; (5) that the daily excretion is small ; (6) that oxalic acid is not produced in metabolism ; (7) that it can be and is absorbed by the alimentary tract ; (8) that after absorption it is not oxidised, but is excreted unchanged ; (9) that the amount absorbed depends upon the amount taken in the food or in drugs, and on various conditions that may aid the absorption, notably being influenced by the amount of acid in the stomach ; (10) that "oxaluria" is no special pathological condition, but is essentially a hyperacid dyspepsia, and that all its symptoms can be referred to the existence of acid dyspepsia.

30. The treatment of uric acid concretions.

Von Noorden (*Congress d. inn. Medicin, Wiesbaden, April 10, 1896*) considers that there are four methods of treating renal concretions in the uric acid diathesis: (1) The administration of large quantities of fluids; (2) the prescription of a diet which will prevent the formation of uric acid; (3) the administration of substances which when secreted by the urine will tend to dissolve uric acid; (4) the prohibition of substances which when excreted by the urine diminish the solvent properties which urine possesses. The first method of treatment explains itself, the second represents an altogether problematical attempt, the third is frequently used, the fourth, though neglected, will one day, he considers, give the best results. In the treatment of such cases, it is essential to avoid strong acids, and a diet rich in nuclein. The administration of alkalies tends to give the urine a feebly acid reaction for the monophosphate of soda, which is opposed to the solution of uric acid, is replaced by the biphosphate, which favours the solution of uric acid. Carbonate of calcium, given in 3j doses, is usually sufficient to cause a disappearance of the monophosphate from the urine. Sometimes it is necessary, however, to give a much larger dose. The salts formed by lime and vegetable acids might be prescribed in smaller doses. The treatment must be strictly individualised and the dose required estimated by examination of the urine. Von Noorden has made use of the treatment in twenty-one cases suffering from the uric acid diathesis. The results obtained were good. In nine months only two relapses were observed, while before treatment attacks of renal colic were frequent.

Klemperer (*Berlin klin. Woch.*, 1896, No. 33) points out the necessity of a free diuresis (3 to 4 litres per diem) in the treatment of uric acid concretions. To maintain this diuresis it is necessary to avoid saline and drastic purgatives. If constipation be present, water enemata should be used, these not only relieving the constipation, but aiding the diuresis. Excessive sweating must also be avoided. According to modern research, uric acid is the ultimate product of the decomposition of nuclein, and not an intermediate product, the result of an insufficient oxidation. Foods containing little nuclein must be taken; veal, liver, spleen and brain must be specially avoided. Milk, meat, and vegetables are to be recommended. The diet must not, however, be too rigorous. Coffee, tea, and cocoa contribute to the formation of uric acid, but need not be absolutely prohibited. Muscular work augments the production of uric acid, and must also be prescribed with caution on account of the perspiration

which it causes. Mineral waters constitute alkaline remedies convenient and agreeable. They must not be taken with food, but in the morning, and four to five hours after a meal.

31. The action of diphtheria antitoxin upon the kidneys.

Vissman (*Medical Record*, September 14, 1895, p. 374) gives an account of experiments on rabbits to ascertain the effects of diphtheria antitoxin on the kidneys. A number of experiments was performed, and the animals were killed at varying periods after the injection. In all the cut surface of the cortex of the kidney was found very much injected, slightly opaque, and a little more prominent than the medullary substance, which was pale in colour. Under the microscope the Malpighian bodies and capillaries of the cortex were found distended with blood. The epithelial cells of the tubules were found filled with retractive granules obscuring the nuclei, which were only brought to view by the use of acetic acid. No casts were found in the tubules. In the animals killed at a late period (seven days) after the injection, the engorgement of the blood-vessels had diminished and the cloudy swelling was more marked. He concludes that the use of anti-toxin injections has a distinctly irritating effect on the kidneys.

GOUT, RHEUMATISM, AND RHEUMATOID ARTHRITIS.

BY ARCHIBALD E. GARROD, M.A., M.D., F.R.C.P.,

Assistant Physician to the Hospital for Sick Children, Great Ormond Street; Medical Registrar and Demonstrator of Morbid Anatomy at St. Bartholomew's Hospital.

1. Gout.

G. Klemperer (*Deutsche med. Woch.*, xxi., p. 655, 1895) considers that the phenomena of gout cannot be explained either as the results of a mere crystallisation of sodium biurate from the blood, or of necrotic changes in the tissues produced by uric acid; since neither uratic deposits nor local necrosis are met with in other conditions, such as leucocythæmia and chronic nephritis, in which an excess of urate is present in the blood.

This observer found that the serum of gouty individuals still possesses a considerable solvent power for uric acid, and attributes its deposition in the tissues to a special chemical affinity of the necrotic areas for this substance. The necrotic changes he attributes to the presence of an unknown poison which he designates the "Gichtstoff."

Kolisch (*Wiener klin. Woch.*, viii., p. 787, 1895) regards the xanthin bases as the chief agents in the production of gout. He holds that the alloxuric substances—viz. uric acid and the xanthin bases—are the ultimate products of the breaking down of nuclein in the body. As long as the uric-acid-forming organs—and he regards the kidneys as the chief of these—are intact, the bulk of the products of nuclein metabolism are excreted as uric acid; but when the kidneys become diseased, less uric acid is formed, and there is a corresponding increase in the production of xanthin bases.

Kolisch states that in the urine of the gouty there is always an increase of alloxuric substances, and that these, and especially the xanthin bases, produce lesions in the kidneys analogous to those caused by lead.

Kolisch further believes that a constitutional tendency to the increased breaking down of nuclein is inherited by gouty

individuals, but that it is only when the renal functions become impaired from any cause that the graver manifestations of the diathesis make their appearance.

Since we have no power of controlling the tendency to the destruction of nuclein, Kolisch holds that the aim of our treatment should be to restrain any unnecessary aggravation of this tendency by dietetic and medicinal means, and to favour the conversion of the destruction products of nuclein into uric acid rather than into the xanthin bases. With these objects the intake of nuclein-containing substances should be restricted, and the kidneys should be shielded from damage. He holds that alkalies do good by aiding the poison-eliminating function of the kidneys, but that they are useful only when the renal function is already impaired. Meat he regards as harmful only when taken in excess, and then merely on account of the nuclein destruction which accompanies the leucocytosis of digestion. Tissues rich in nuclein, and soups, are to be forbidden, but stewed meat, which is largely deprived of its extractives, may be recommended. Carbohydrates may be regarded as harmless, and fats and milk form an important element in the diet of the gouty. All vegetables may be allowed except those which contain principles belonging to the xanthin group—*e.g.* asparagus.

Exercise within bounds is good, but excessive exercise tends to increase nuclein metabolism, and should be avoided.

Weintraud (*Charité Annalen*, xx., p. 215, 1895) has also found an excessive excretion of alloxuric substances in gouty patients, and states that, even when other signs of renal disease are wanting, the excretion of xanthin bases is often increased in proportion to that of uric acid; but the relation varies within wide limits on different days, even in the same case.

Schmoll, on the other hand (*Zeitschrift f. klin. Med.*, xxix., p. 510, 1896), found no increased excretion of alloxuric substances in a case of chronic tophaceous gout in which he made an elaborate study of the metabolism, nor were the xanthin bases increased in proportion to the uric acid.

Here, then, we are confronted with a direct conflict of evidence, and further observations must be awaited before Kolisch's views can be accepted as affording a satisfactory explanation of the phenomena of gout.

It has only been possible to give here a mere sketch of the contents of the papers above referred to, which contain many other interesting and important observations, for which the originals should be consulted.

Some observations of Schmoll's bearing upon the question

whether or no the accumulation of uric acid in the blood of gouty persons is dependent upon a diminution of the power of the kidneys to eliminate that substance are of special interest. As Vogel had previously done, he found a marked diminution of the total nitrogen excretion in his gouty patients, similar to that met with in cases of renal disease; but on the other hand an increased intake of phosphorus promptly led to an increased excretion; whereas Fleischer has shown that diseased kidneys show a diminished power of excreting phosphoric acid before their power of excreting nitrogenous substances is seriously impaired. Again, the administration of thymus extract greatly increases the excretion of uric acid, and in Schmoll's case a great increase was observed after its administration, showing that in the gouty patient the power of the kidneys to excrete uric acid was not overtaxed, since these organs responded like those of a healthy individual to the administration of thymus.

In a paper on "Metabolism in Relation to Gout" (*Dublin Journ. of Med. Science*, cxciv., p. 490, 1896), M. A. Boyd maintains that the defective metabolism of gouty patients may have its origin in derangement of various anatomical systems, and that the digestive and renal functions are not alone at fault. To the nervous system he assigns a conspicuous influence in this respect, as also to the digestive and circulatory systems. To a lesser extent he holds the lymphatic, respiratory, and muscular systems responsible for a share in the mischief. Boyd looks upon a gouty individual as one whose general metabolism is readily upset, and he thinks that this instability may be due to a disturbance of any of the above systems. We should endeavour to ascertain in each particular case where the fault lies—an investigation which is often rendered peculiarly difficult by the interdependence of the various systems. Above all, he holds that, in treatment, the mere clearing of the blood and system of uric acid should be by no means the ultimate aim, but rather the correction of the faulty metabolism in whichever system it has its origin.

Among the uncommon complications of attacks of acute gout are acute inflammatory affections of the salivary glands. Cases of gouty parotitis have been described by Debout d'Estrées and others; and Missale (*Gazzetta degli Ospedali*, xvi., p. 1523, 1895) records an instance in which acute inflammation of the sub-maxillary and sublingual glands accompanied a second attack of gout in the great toe.

Opinions are still divided as to the utility or uselessness of piperazine and lysidine in the treatment of gout; and Mordhurst, of Wiesbaden, whose views have been frequently quoted in these

pages, discusses (*Therap. Monats.*, x., p. 210, 1896) the reason why these substances, which, outside the body, possess so remarkable a solvent power upon uric acid, are, as he believes, so useless in the treatment of gout.

He regards the homœopathic concentration, in the body fluids, of the drug administered as the chief cause. The quantity present is still further diminished owing to the fact that the kidneys at once commence to excrete the drug as soon as it is absorbed; and thirdly, the quantity of such organic bases in the circulation is still more reduced by the destruction which they there undergo. Lastly, the addition of sodium chloride or sulphate and other neutral salts destroys the uric-acid-dissolving power of the drugs, and so renders them inert in the urine.

Sir Alfred Garrod (*Medico-Chirurgical Trans.*, lxxix., p. 313, 1896) regards guaiacum as a drug of very great value in the treatment of gouty affections, and in warding off the recurrence of acute attacks. His conclusions may be summed up as follows: Guaiacum is an absolutely innocuous substance which may be taken continuously for an indefinite period. It possesses a considerable power, although less potent than colchicum, of directly relieving gouty inflammations, and may be given when fever is absent. When taken in the intervals between the attacks it has a considerable power of averting their recurrence, and prolonged use does not impair this prophylactic power. In some cases guaiacum causes intestinal irritation, and in such cases serpentry may be advantageously substituted.

Burney Yeo (*Practitioner*, N.S. ii., p. 47, 1895) discusses the mineral-water treatment of gouty patients, and gives valuable hints as to the class of mineral waters most suited for the treatment of the various accidents which may arise in the course of the disease. After enumerating the various gouty conditions which are benefited by mineral-water treatment, he proceeds to give a classification of such waters as follows:—

1. Simple alkaline waters, such as those of Vichy, which are specially useful in gouty dyspepsia and chronic catarrhal conditions, as well as in the treatment of biliary and renal gravel and bladder affections.

2. Alkaline waters containing sodium chloride—*e.g.* Ems and Royat. These he looks upon as of special service in cases of bronchial and pulmonary catarrh of gouty origin.

3. Alkaline waters containing sodium sulphate, such as those of Carlsbad, which are indicated in cases attended with hepatic or intestinal troubles.

4. Common salt springs :—

- (a) Cold or tepid, used internally, such as those of Homburg and Kissingen, useful in cases with intestinal symptoms or hepatic congestion.
- (b) Brine baths, such as Droitwich or Kreuznach, serviceable in cases of chronic joint affections.
- (c) Hot salt springs—*e.g.* Wiesbaden and Nauheim, useful in the same class of cases.

5. Indifferent waters—*e.g.* Buxton or Wildbad, useful in chronic joint affection.

6. Sulphur springs, cold or hot—*e.g.* Harrogate, Aix-les-Bains—useful in chronic articular and cutaneous troubles, as well as in catarrh of the respiratory passages.

7. Alkaline earthy springs—*e.g.* Contrexéville. The value of these Yeo considers to have been exaggerated, and in the cases for which they are chiefly resorted to he believes alkaline springs to be more efficacious.

Among English spas he recommends Harrogate for chronic articular gout, gouty neuralgia, and skin affections, as well as for intestinal or hepatic torpor. Bath and Buxton, our English thermal springs, he recommends especially in articular and neuralgic cases. To Strathpeffer he ascribes special value in gouty eczema. Leamington may be resorted to by patients with disturbances of hepatic or renal elimination, and may be compared to Homburg or Kissingen. Woodhall is suitable for the same cases as Kreuznach or Ischl. Llandrindod is also resorted to with advantage by gouty patients. Yeo lays stress upon diet and regimen as important adjuvants to the mineral-water treatment of gouty affections.

The question of the importance of gout in relation to life assurance has excited considerable interest of late, and **E. J. Marsh** (*Glasgow Med. Journ.*, xliv., p. 176, 1895) arrives, as others have done, at the conclusion that the lives of gouty patients should, with few exceptions, be accepted only at increased rates. He considers that when this rule is departed from it should be in consideration of such points as the following :—(1) The absence of any hereditary tendency. (2) The first appearance of the disease after the age of thirty. (3) The attacks should have been few and slight, and several years should have elapsed since the last attack. (4) There should be no frequency of uric acid deposits or tendency to gravel or lithæmia. (5) The habits of the applicant should be abstemious, and he should have given evidence of an appreciation of the necessity of such a course of life.

2. Rheumatism.

A discussion on acute rheumatism in the medical section of the British Medical Association, at the London meeting, 1895, was opened by **Cheadle** with a most valuable address. This discussion was chiefly remarkable from the fact that the great majority of the speakers who took part in it gave their adhesion to the view that it is in all probability a disease of infective origin. This shows a very marked change of opinion on this subject among our compatriots, who have been very loth to relinquish the chemical theories of the pathology of rheumatism.

In his opening address Cheadle commenced by discussing the relationship to true rheumatism of the remarkable group of ab-articular affections—such as erythema, fibrous nodules and chorea—which form so characteristic a feature of the disease as seen in childhood, and the rheumatic nature of which Cheadle has done so much by his writings to establish upon a firm basis.

Much of the opposition which has been offered to the extension of the category of rheumatic affections so as to embrace these manifestations, and especially chorea, appears to the present writer to arise from the fact that the various authorities who have taken part in the dispute employ the word “rheumatism” in different senses.

If by rheumatism we mean an inflammatory affection of joints, often attended with cardiac complications, it is obvious that chorea is not rheumatism. If, on the other hand, we regard arthritis as only one of a series of manifestations of a systemic disorder involving many structures, and apply the name of rheumatism to this systemic disease, it is equally obvious that in many instances chorea must rank with endocarditis and arthritis among its outward manifestations.

Cheadle has always taught that almost all the manifestations of rheumatism may be produced by other causes besides rheumatism, and that it is by their association together in any given patient that the rheumatic nature of his malady is revealed.

After passing in review the various theories of the pathology of rheumatism, Cheadle showed that in many respects the infective theory has the best claims to acceptance, but points out that the rheumatic virus cannot be a highly infectious germ. He compares it rather to the non-infective protozoon of ague, or to organisms infective only under special conditions of transmission, like those of tetanus, tubercle, or pneumonia.

In his Milroy lectures in 1895 (*Lancet*, 1895, i., pp. 589 and 657) **Newsholme** entered most fully into the statistical evidence, which tends to show that acute rheumatism is apt to occur in epidemic

outbreaks, and gave an account of the influence of climatic factors and soil upon its prevalence. Newsholme's conclusions were based upon hospital and other statistics derived both from British and Continental sources. Among these the Scandinavian, and especially the Norwegian, statistics were of special interest, for notification of rheumatic fever has been compulsory in Norway since 1861. The relation of acute rheumatism to rainfall is apparently an indirect one, low subsoil water and high earth temperature being among the most important of the conditions which favour the prevalence of the disease.

Newsholme's researches have led him to the conclusion that both on clinical and pathological grounds the features of rheumatic fever are best explained on the supposition that the disease is caused by the entry into the system of a specific micro-organism.

Similar views are advanced by **Sir Willoughby Wade**, who recently (*Brit. Med. Journ.*, 1895, i., p. 829) contributed a paper on "Tonsillitis as a Factor in Rheumatic Fever," in which he gives his support to the view that the tonsils are the primary seat of an infective process, and that rheumatism is a secondary disease arising from the absorption of microbes or their products into the system. The same subject is discussed by **Goedel**, in a paper on "Sore-Throat as an Antecedent of Acute Rheumatism" (*Deutsche med. Woch.*, xxii., p. 259, 1896).

In a second edition of his work on Rheumatism, recently published, **Maclagan** maintains the view set forth in the first edition, that acute rheumatism presents close analogies with the malarial group of fevers.

When, now, we turn to the bacteriological aspect of the question, it must be allowed that the outlook is far from encouraging. Certain observers having of late years met with various septic organisms in rheumatic cases, the view has gained ground, especially in Germany, that rheumatic fever is not a specific disease due to a single characteristic organism, but may result from the penetration into the system of a variety of species—in a word, that its pathology more closely resembles that of ulcerative endocarditis than that of the specific fevers.

Gustav Singer (*Wiener klin. Woch.*, viii., p. 449, 1895) records the results of bacteriological examination of the urine in this disease. The number of cases in which examinations were made was seventeen, nine of which were severe, two of moderate severity, and six slight. Repeated examinations were made in each instance.

In ten cases *staphylococcus pyogenes albus* was found, and in two of these the same organism was present in the blood. In one

case staphylococcus aureus was met with in the urine, and in two others streptococci, as well as staphylococcus albus. In one case with cystitis, bacterium coli commune was abundantly present. The connection between the presence of the organisms and the disease was rendered more probable by the relation between their abundance or scarcity and the fluctuations of the symptoms. No results were obtained with the sweat of rheumatic patients.

F. Chvostek, on the other hand (*Wiener klin. Woch.*, No. 26, 1895, p. 469), replying to Singer, states that he has examined the urine in twelve cases, in nine of which the results were negative. In only three were micro-organisms found. In one instance, diplococcus ureæ was present; in one case in which the urine was not drawn off by catheter, staphylococcus pyogenes albus; and in the third case large cocci of uncertain nature were found, probably derived from the urethra.

In all cases of true rheumatism Chvostek has obtained negative results from the articular fluid, and only in septic and gonorrhœal cases were organisms found in such fluid. He proceeds to discuss the reasons for the positive results so often obtained, and concludes that the joint lesions are not directly due to bacterial agencies, but to toxins.

Haig (*Brit. Med. Journ.*, 1895, ii., p. 1602), who looks upon gout and rheumatism as mere modifications of a single disease—viz. arthritis due to uric acid—discusses certain cases in which he believes that arthritis and endocarditis result from the administration of drugs which have the property of diminishing the solvent power of the blood for uric acid. He gives examples of cases in which he thinks such results were brought about in the course of treatment—*e.g.* that of a man suffering from phthisis who developed pain in the shoulder and a systolic murmur at the heart's apex when taking a mixture containing nitrohydrochloric acid and strychnine, on account of night sweats.

The second example quoted is that of a child suffering from chorea, who developed signs of endocarditis (surely no uncommon event in this disease, apart from medicinal treatment), which Haig attributed to the effect of arsenic, which was given in large doses, in causing a diminished excretion of uric acid. In addition to other cases of the above class, Haig quotes examples in which a relapse of chronic rheumatism was apparently due to drugs administered for other reasons.

Julius Weiss (*Centralb. für innere Medicin*, xvii., p. 417, 1896) has essayed the treatment of rheumatic fever by serum injections. The serum which he employed was obtained by venesection from patients who had recently passed through an acute articular

attack. It was injected in ten cases with arthritis and fever of moderate severity; but although in some instances recovery was rapid, Weiss is unable to claim any specific curative action for the treatment. In most instances, after repeated injections had failed to effect a cure, it was found necessary to resort to the salicylates. The dose of serum usually administered was as a rule from 6 to 10 grammes, but in two cases 18 and 20 grammes respectively were administered.

There appears to be a lull in the production of new drugs offering a prospect of acting as effectually as the salicylate of sodium, whilst being free from the disadvantages which may attend the administration of that drug.

3. Rheumatoid arthritis.

An interesting contribution to the pathology of rheumatoid arthritis is supplied by some observations of **Bannatyne, Wohlmann** and **Baxall** published during the past year (*Lancet*, 1896, i., p. 1120). Bannatyne and Wohlmann were led, by their study of the clinical features of the disease under consideration, to the belief that it owed its origin to microbic agencies, and therefore instituted a search for a specific micro-organism in the synovial fluid and blood of a series of patients. They state that after much fruitless search they were ultimately rewarded by the discovery of what they regard as a distinctive micro-organism in the synovial fluid. The organisms in question could be stained with fuchsin or with methylene blue, but could not be stained by Gram's method. Baxall, who was requested to examine into the subject, confirmed the above observations, and was eventually successful in obtaining cultures. The organism described is a short bacillus of dumb-bell shape, which, owing to the fact that the poles stain more readily than the intervening portion, is apt to present the appearance of a diplo-bacillus. In hanging drop preparations a process of division could be observed. In flasks of perfectly pure peptone broth at a blood heat, floating colonies appeared on the fourth day, and on the same day tubes of nutrient agar, inoculated from the beef-broth, showed delicate transparent films upon the sloping surfaces. A similar but less obvious growth occurred on blood serum. The organism was found in the synovial fluid in twenty-four out of a series of twenty-five cases of rheumatoid arthritis; and in a few instances was detected in the blood also. It was not met with in cases of synovitis of other kinds, although organisms somewhat similar in morphological features were noted.

Seeing that the organism was constant in its characters and exhibited marked peculiarities in its modes of growth, the authors

consider that, in spite of the fact that complete confirmation by the reproduction of the disease in animals is still wanting, there can be little doubt that the bacillus which they describe is the true cause of rheumatoid arthritis.

The occurrence of a bacillus in the articular fluid of patients suffering from this disease had already been described by **Max Schüller** some three years ago (*Berliner klin. Woch.*, xxx., p. 865). This observer found short thick rods with polar bodies, which appeared bright or dark according to the mode of illumination, and with a narrower intermediate portion. The polar bodies were round, oval, or elongated. The bacilli stained best with carbol-fuchsin, not quite so readily with methyl violet, and considerably less readily with methyl blue or Bismarck brown. On the injection of cultures of the bacilli into the joints of animals Schüller never saw suppuration result, but changes in the joints were observed similar to those present in human joints, and quite different from those resulting from injections of other kinds which he had performed. The cases in which the bacilli were found are described as cases of chronic rheumatic arthritis with the formation of synovial tufts.

Chauffard and **Ramond** (*Revue de Méd.*, xvi., p. 345, 1896) have called attention to the occasional enlargement of lymphatic glands in the neighbourhood of joints affected with rheumatoid arthritis, and especially of the inguinal, axillary, and epitrochlear glands. In the cases recorded by them the enlarged glands remained discrete, and the degree of enlargement was apparently connected with the state of the affected joints. In order to exclude a concurrent leucocythæmia they examined the blood in two cases and found no increase of leucocytes.

In scrapings from excised glands, and in the synovia obtained from the diseased joints, they also found a short slender diplobacillus which stained readily, and which was not decolourised by Gram's method; but they were unable to obtain cultures of the micro-organism.

Chauffard and **Ramond** consider that such cases form a distinct group of chronic arthritides of infective nature, which should be distinguished from the other varieties of rheumatoid arthritis.

Fortescue Fox (*Trans. Hunterian Society*, 1895-6) completes his review of the varieties of rheumatoid arthritis (see "Year-Book," 1896, p. 131) by a consideration of the cases in which one joint or a few contiguous or related joints are alone the seat or seats of disease. The author regards this form of arthritis as a purely local disease of the climacteric and senile periods of life,

and often of the nature of a mere senile decay of the articular structures. The hip, shoulder, and knee are specially liable, injury is often the exciting cause, and the joints of the right side of the body are more apt to suffer than those of the left.

As to treatment, he regards rest as the first and most obvious indication. The general health should be maintained; gouty condition and debility, if present, call for appropriate treatment. Blistering is useful if effusion be present, and the actual or galvano-cautery may be resorted to if a more rapid effect is desired. Local application of heat and thermal treatment by douches or otherwise are to be recommended. In association with mineral baths, inunctions with hot oil, or a combination of iodide of potassium and lanolin, may be usefully employed.

Fox places Heberden's notes in a distinct category, regarding them as the usual manifestation of articular gout, either hereditary or acquired, in middle-aged women.

William Armstrong (*Medical Press and Circular*, cxi., p. 655, 1895) lays stress, as Ord had previously done, upon the importance of utero-ovarian irritation as a factor in the causation of rheumatoid arthritis.

He has obtained excellent results, in cases in which such causes were apparently at work, by the use of the galvanic bath. He recommends that the patient be placed in a porcelain bath containing water at a temperature from 92° to 97° F., with large electrodes, the positive placed at the head of the bath, the negative at the foot. The current is gradually turned on, the dosage varying from 40 to 240 milliampères, according to the requirements of the case. The duration of the bath is from ten to thirty minutes, and in cases in which the hands are affected the negative pole is attached to hand stirrups, which the patient holds under water.

He sometimes employs an alternating current with 75 alternations per second, and a voltage of 8 to 12. This form of current he usually employs when the general nutrition is defective, and when the joint mischief is not very active. When the joints are very tender and there is much utero-ovarian irritation, the constant current is preferable.

The effects observed are relief of utero-ovarian pain and irritation, marked decrease of articular swelling and pain, improved appetite, digestion, and general nutrition; and Armstrong has found these effects to persist after the treatment is discontinued. Steavenson, Lewis Jones, and other physicians with special experience of electrical treatment, had previously spoken highly of the effects of the electric bath in rheumatoid arthritis. It is

obvious that no satisfactory idea of the efficiency of this treatment can be formed from results obtained in cases in which it is tried as a last resort, all other forms of treatment having already failed to give relief. In order to give such measures a fair trial they should be resorted to in cases in which it may reasonably be anticipated that other lines of treatment would also afford relief, and before the disease has reached such a stage that the mischief done must be regarded as irreparable.

Knowsley Sibley (*Lancet*, 1896, ii., p. 593) gives a most encouraging account of the results which he has obtained by local hot-air treatment, applied by means of the Tallerman-Sheffield apparatus, in rheumatism and allied affections, including rheumatoid arthritis.

This apparatus consists of a copper chamber, usually cylindrical, and made in various shapes and sizes, so that any limb or part of a limb can be treated separately. The air in the chamber is kept dry, and its temperature can be raised or lowered at will. The treatment is applied for a period of from fifty minutes to an hour, and is gradually raised from about 150° to 220° , or even 300° . The patient breaks out into a general free perspiration, and the body temperature is temporarily raised from half a degree to as much as three degrees. Pulse and respiration are also increased in frequency. When the treatment is stopped the normal condition is quickly returned to. The immediate effects are relief of pain and stiffness. After the treatment the whole body is briskly and lightly rubbed down, and the limb is sometimes massaged with oil.

Sibley has found the treatment of great service in cases of rheumatoid arthritis which have reached a stage in which other treatments are likely to be of but little avail. In conclusion, he states that although he has employed this form of treatment for two years, he knows of no unsatisfactory result following it, although many of the cases treated have been by no means promising. Many of the patients were old and debilitated people, and in some cases cardiac and other visceral complications were present. One of the most valuable effects is the sleep which usually follows the treatment, particularly in cases in which pain has precluded any rest for long periods.

INFECTIOUS FEVERS.

BY SIDNEY PHILLIPS, M.D. LOND., F.R.C.P.,

*Senior Physician to the London Fever Hospital; Physician to and Joint-Lecturer on
Medicine at St. Mary's Hospital.*

DURING the past year the contributions to the therapeutics of infectious diseases have been almost confined to the results obtained by one or other form of serum treatment.

1. Diphtheria.

It would be impossible to analyse, or even to summarise, the extraordinary number of figures and statistics that have been published in reference to the serum treatment of diphtheria. From almost every part of the world reports of cases treated in this way have been forthcoming, and scarcely an issue of any medical publication has been without comments on the results.

Many medical men have published reports of one or a few cases treated by the antitoxin, but such reports are now little required: the injection of antitoxin has become an established mode of treatment, and the publication of isolated cases of diphtheria that have recovered after the injection proves nothing more than we already know. The knowledge we desire to obtain is whether the antitoxin treatment is the best mode of treatment of diphtheria. And such knowledge can be obtained only from observations on the mortality of large numbers of cases, and from a careful comparison of the death-rate with that which occurs with former methods of treatment.

Among the inquiries thus conducted on a large scale is that of the American Pediatric Society. This Society instituted an inquiry into the results of the treatment, receiving reports of 3,384 cases from 613 medical men. The general opinion of the observers was that the cases they reported upon were of average severity: in 593 the tonsils alone were involved; in 1,397 the tonsils and pharynx, or nose or pharynx, or tonsils and nose, or all three were affected; in 1,256 cases the larynx was affected, either alone or with other parts: in addition to the above cases 942 cases were contributed by Dr. H. M. Biggs. The summary of the

reports states that no cases of sudden death after injection occurred; there were nineteen cases in which the serum, though injected reasonably early, did not appear to influence the disease; in three cases the patients seemed to be made worse by the antitoxin. The general mortality was 12 per cent. The most striking improvement was seen in cases injected during the first three days, yielding a mortality of 7·3 per cent.; among those injected on or after the fourth day the mortality was 27 per cent. The most convincing argument in favour of the serum is that of the 1,256 laryngeal cases, half recovered without operation; and of the 533 cases in which intubation was performed, 29·5 per cent. died—a mortality less than half of that under any other recorded treatment. Only 5·9 per cent. of cases had broncho-pneumonia; in many cases there was great improvement in the heart's action. There was no evidence to show nephritis was caused by the serum; the protection against paralysis was not great (*Arch. of Ped.*, July, 1896).

In England the most important series of cases that has been published is comprised in the Report of the Medical Superintendents of the Hospitals of the Metropolitan Asylums Board on the use of antitoxic serum in diphtheria during the year 1895. This report will be discussed under the following heads: (1) Laryngeal cases; (2) non-laryngeal cases; (3) cases not treated by antitoxin; (4) statistics as to the total mortality of all cases admitted.

(1) *Laryngeal cases.*

This group consisted of cases in which the larynx was affected; presumably they were cases of true diphtheria; they were 543 in number in 1895; they were treated by antitoxin, and the mortality was 42·3 per cent.

In the previous year the laryngeal cases were 466 in number; none were treated by antitoxin, and the mortality was 62 per cent.

This reduction in the death-rate of 19·7 per cent. affords a striking evidence of the value of the antitoxin treatment in laryngeal cases.

It must be pointed out, however, that in 1895 cases moribund at the time of their arrival and beyond reach of treatment were excluded from the antitoxin treatment; many such cases must have been laryngeal cases. On the other hand, the cases in 1894 with which these antitoxin cases are compared in the Report included *all* cases of laryngeal diphtheria, and the deaths among them must have been swelled by the inclusion of these hopeless cases. The reduction of 19·7 per cent. in the mortality which appears from a comparison of these two non-corresponding groups

of cases cannot therefore be entirely attributed to the use of antitoxin, as is done in the Report.

(2) *Non-laryngeal cases.*

The figures given do not allow of any computation of the mortality of these cases, for though it is stated that the laryngeal cases treated by antitoxin were 543 in number, the remaining 2,986 cases no doubt included some laryngeal cases which were past any treatment. It is not possible therefore to ascertain how many non-laryngeal cases were admitted into the hospitals, and therefore no comparison can be made between such cases treated by antitoxin in 1894 and those not so treated in 1895. But as the reduction in the mortality is computed at 7·1 per cent. on *all* cases admitted, and the reduction of the mortality of the laryngeal cases, included among them, was 19·7 per cent., it is obvious that the reduction in mortality in the non-laryngeal cases treated by antitoxin must have been very much less than in the case of laryngeal diphtherias.

(3) *Cases not treated by antitoxin.*

These were cases in which the serum treatment was not adopted; some because the symptoms on admission were not "sufficiently pronounced to give rise to anxiety," and others because they were hopeless. They were in all 1,347 cases, or 38·2 per cent. of the whole number. The Report does not state how many were excluded as too mild and how many as too hopeless for antitoxin treatment; but as 181 of these patients died, we may infer that that, or about that, number were the hopeless cases. If this be so, the abstraction of so large a proportion of inevitable deaths from the antitoxin-treated cases must be borne in mind when comparing the antitoxin treatment of 1895 with the non-antitoxin treatment of 1894.

The Report, indeed, does not afford data for any estimate of value of either the absolute mortality of *true* diphtheria when treated by antitoxin, or of the comparative results of the antitoxin treatment of 1895 as compared with treatment without it in 1894.

No inference as to the mortality of *true* diphtheria is permissible when the criterion of diagnosis is clinical and not bacteriological; and no comparison is possible between the antitoxin treatment of 1895 and the non-antitoxin treatment of 1894, for the reason that there is no group of cases in 1895 which corresponds with any tabulated group in 1894.

(4) *Total mortality of all cases.*

If the cases treated by antitoxin in 1895 be compared with the cases treated without it in 1894, we find that in the former year the mortality was 28·1 per cent. as against 29·6 per cent. mortality

in 1894, a reduction of only 1·5 per cent. from antitoxin. The Report points out that this is a comparison between the severe cases and those in which a large proportion were mild and therefore misleading. This is not quite so, as the hopeless cases were weeded out from the antitoxin cases; but the contention may be granted. The comparison which is adopted by the Report is one which gives a percentage reduction in the mortality from the use of antitoxin of 7·1 per cent. This conclusion is arrived at by comparing 2,965 cases of diphtheria—1,848 treated by antitoxin and 1,117 without it in 1895—and yielding a mortality of 20·2 per cent., with the 3,042 cases of diphtheria all treated without antitoxin in 1894, and yielding a mortality of 29·6 per cent. This comparison as a test of the value of antitoxin treatment is at least as misleading as the rejected comparison, for it is arrived at by comparing a series of cases (from which the mild and the hopeless cases have been excluded), some treated by antitoxin and some not, with another series of cases of all grades of severity just as they presented themselves at the hospital, and none of them treated by antitoxin. Such a comparison may tell unduly for or against antitoxin treatment—which it is not possible to say—but as a comparison it is valueless.

2. Complications.

The Report also deals with the complications of diphtheria after antitoxin treatment. There is a very trifling increase in their incidence, quite accounted for by the fact that any remedy which enables diphtheria patients to prolong their lives gives a longer time for complications to develop.

The serum used was for the first eight months supplied from a different source to that in the later four months; the Superintendents found no difference in the value of the two supplies. During the period comprised in the Report the dosage was regulated only by the volume of the serum, not by its standard of immunisation; since then improvements in increasing the immunising value of the serum have been introduced; the frequency of injection, the dose and amount of serum given in each case and in each hospital, have varied much. It is probable that increased experience will determine more accurately the appropriate dosage, and that improved clinical results will be obtained.

The Report of the Superintendents is of great value, and is most carefully drawn up; but at the same time, in making any deductions drawn from the figures contained in it, it must always be borne in mind that the antitoxin-treated cases were not proved cases of diphtheria, and were certainly diluted by many

cases not true diphtheria; that in one of the hospitals the antitoxin treatment was not confined to the severe cases, and that in all, the former treatment of antiseptics, etc., was very rightly continued with the antitoxin.

3. Dangers of antitoxin.

Goldstein (*Therap. Monats.*, No. 5, p. 269, 1896) has collected seven cases of death immediately after injection of antitoxin in diphtheritic children, and four deaths among children injected with antitoxin as a preventive measure. **Rosenberg** (*New York Med. Journ.*, September 26, 1896) records the case of a girl who had a little membrane on each tonsil; 2,000 units of antitoxin were injected; one hour later there was a chill, collapse, and unconsciousness, with passage of coal-black fæces and opisthotonos (the latter possibly from strychnia which he administered); she recovered. The death of a child of Langerhans, of Berlin, occurring immediately after a prophylactic injection of antitoxin, was attributed to the injection, but a *post-mortem* examination showed that the child had just completed a very heavy meal, and that in vomiting he had drawn some of the contents of the stomach into the air-passages, which caused death.

Halderman, of Portsmouth, Ohio, injected a prophylactic dose of Behring's serum beneath the scapula of a boy of five years belonging to a family some of whom had a mild form of diphtheria. The boy was asleep when the injection was given, and in perfect health, but in five minutes he was dead.

Gratiot, of Wisconsin, injected antitoxin as a prophylactic into the right breast of a woman who had been nursing her husband and child with diphtheria. There was a little redness a few minutes after the injection, and faintness followed by rapid rise of pulse; her fauces, pulse and temperature were normal, and appetite good; pallor and shallow breathing ensued, and the patient seemed for a time to be at the point of death.

Ausset (*Journ. de Méd.*, October, 1896) records the case of a child with a "benign" diphtheritic sore-throat, who got well from this after an injection of 20 c.c. of antitoxin, but twelve days later he got an erythematous rash, fever, and albuminuria, and died in ten days of asthenia. Ausset attributes the death to antitoxin.

Holt (*New York Med. Journ.*), **Alfodi** (*Pester med. Presse*), **Moizard** (*Sem. Méd.*) publish cases of deaths from prophylactic injections.

Seebert and **Schwyzzer** (*New York Med. Journ.*, v. 43, No. 22) believe from experiments on guinea-pigs that sudden deaths from antitoxin injections are caused by injected air; this supposition is combated in the *Therapeutic Gazette*,

September, 1896, by the argument that in the experiments on guinea-pigs very large quantities of air were injected which would have effects much severer than the small quantities that possibly might be injected by accident with antitoxin serum, and that in the guinea-pigs the air was injected into a vein, while the serum is usually injected into parts of the body devoid of large veins. The authors, however, believe that a very small quantity of air, even $\frac{1}{2}$ c.c., may suffice to kill suddenly.

Though it is possible that death did not result in *all* these cases from the antitoxin, they sufficiently show that injections of antitoxin are not entirely unaccompanied by danger, and should serve as a warning to those like Dr. Rotch (*Arch. of Pediatrics*), who states that "every child who comes to the Children's Hospital in Boston, U.S., whether he has pneumonia or arthritis or diphtheria, receives antitoxin; this has been done in 700 or 800 cases without any bad results whatever."

4. Secondary effects of antitoxin.

The occurrence of pains in joints, erythematous, urticarial, or morbilliform rashes and occasional pyrexia after antitoxin injections, continues to be observed. Auerbach (*Centrallb. f. inn. Med.*, May, 1896, and *Brit. Med. Journ.*) relates a case treated with serum in which exceptional symptoms arose. A girl aged twenty-two was injected with 1,000 immunity units of serum (Höchst) on the second day of a moderately severe attack of diphtheria. On the fourth day the membrane was still extending. The swelling and pain in the lymphatic glands also increased, so that suppuration was feared. Four days after the injection a typical erythema exsudativum or nodosum appeared. A scarlatiniform rash was also observed on the back. The erythema increased, and was so marked about the joints that hardly any movement could be made without pain. Twelve days after the injection a slight amount of albumen was found in the urine, but no blood or formed elements, and this albuminuria still persisted two months after the commencement of the illness. About the twenty-fourth day periosteal swellings were observed about the tibiæ. The local diphtheria lesions seemed to be quite uninfluenced by the serum treatment. The form of the exanthem and its duration were quite exceptional. The chief part of the eruption appeared in the second week. The albuminuria could not, of course, be attributed to the serum treatment.

With reference to the secondary effects of diphtheria, A. Johannessen (*Deutsch. med. Woch.*, No. 46, 1895) found that, on injecting into twenty-two individuals some serum of perfectly healthy horses which had been submitted to no treatment, a rise

of temperature, a rash and pain in the joints, were produced in about the same proportion as when the serum of horses rendered immune against diphtheria was used. He concludes that it is the serum and not the antitoxin that produces the disagreeable symptoms, and that we should endeavour to use always a very concentrated antitoxin serum.

Le Filliatre (*Gaz. Hebd. de Méd.*, 1896, xliii., p. 385) reports the case of a child of two and a half years with laryngeal diphtheria treated by antitoxin. A month later the voice was nasal; later the head could not be kept erect on the spine, deglutition was difficult, many of the scapular muscles and also some of the abdominal muscles were paralysed. After thirty-three days it passed off, there was no loss of reflexes, and the child recovered. Le Filliatre suggests this was a case of diphtheritic paralysis modified by the serumtherapy.

There seems, however, to be nothing in this case inconsistent with diphtheritic paralysis, as it occasionally occurs when no antitoxin has been given.

5. The efficacy of antidiphtheria serum given by the mouth.

De Minicis (*Gazz. degl. Osped.*, July 19, 1896), being sent for to a case of diphtheria in a child, and on arrival finding his hypodermic syringe out of order, determined to try the effect of antidiphtheria serum when given by the mouth. The result was eminently satisfactory. Since that time the author has had the opportunity of treating four other cases in a similar manner. In each case the effect was quite as good as if the serum had been given hypodermically, and no evil results followed—no gastric disturbance, no skin eruption, and no joint or renal affection. Before deciding as to the dose required, the author thinks further experience desirable. In the five cases the dose given was the same as would have been given hypodermically. The serum was administered in iced milk or pure (it has no unpleasant taste).

6. Enemata of antitoxin serum.

Chantemesse (*Sem. Méd.*, February 7, 1896) has endeavoured to ascertain if it is possible to avoid the ill-effects due to hypodermic injections of serum by means of its intestinal injection. In twenty patients the preventive power of the same dose of serum was substantially the same whether it was introduced under the skin or by the rectum.

7. The bacillus of Loeffler in diphtheria.

Hennig (*Deutsch. aerzt. Zeit.*, 1895, and *Berlin. klin. Woch.*, No. 46, Nov. 1895) found the Loeffler bacillus absent in nine cases in which typical paralysis succeeded, and will not allow that this bacillus is the sole specific agent in diphtheria.

Dräer (*Deutsch. med. Woch.*, No. 18, April 30, 1896) gives the results of bacteriological examination in 400 cases of sore-throat at Königsberg. Of these, only 162 showed the bacillus of Loeffler.

8. Summary.

It has not been possible in the space available to bring under review more than the chief reports which have been published during the past year on the antitoxin treatment. The increased experience with the remedy, though it has not borne out the almost impossible claims made on its behalf when first introduced, has resulted in a very general concensus of opinions in its favour.

At the same time, it is becoming apparent that the cases which derive so much benefit from the antitoxin treatment are the cases in which the membrane involves the larynx or trachea, and that the antitoxin treatment is of very much less avail in reducing the mortality of those cases of diphtheria in which the dangers are mainly septic.

There are several reasons for this. In the first place, all are agreed that the efficacy of the treatment depends upon its early adoption. Now cases that first affect the larynx produce symptoms that early call for medical attendance and allow of early inoculation of antitoxin, while cases of pharyngeal or nasal diphtheria give rise to less urgent symptoms, and often do not come under medical notice till the diphtheritic poison has been absorbed beyond any power of antagonism produced by the antitoxin. Another reason why the laryngeal cases derive so much more benefit from antitoxin than other cases is that in them the most urgent danger is the mechanical obstruction of the larynx and the lining of the trachea by the membrane, and the great power of antitoxin to hasten the separation and prevent the formation of membrane relieves these patients of their immediate danger.

The statistics published everywhere show the truth of what has been written. Thus in the hospitals of the Metropolitan Asylums Board the mortality of the non-laryngeal cases of diphtheria was reduced by antitoxin only 7 per cent., while the mortality in the laryngeal cases was reduced 20 per cent. The author's experience entirely accords with this result. On no account should reliance be placed on antitoxin alone in diphtheria, but antiseptics must be used locally as freely as heretofore, and the patient's strength in every way supported.

It must be remembered that the treatment during the period under review was tentative, and that the strength of the serum and the amount required were, it is becoming evident, not sufficient to obtain the best results.

The deaths, though few in number, which have been recorded

after antitoxin make it in the author's opinion quite unjustifiable to use the treatment as a prophylactic.

9. Typhoid fever.

In connection with typhoid fever the most important investigations have been those by **Widal**, the results of which were communicated to the *Société Médicale des Hôpitaux* of Paris, and reported in the *Journ. de Médecine* for July 25, 1896. The researches of R. Pfeiffer and others have shown that the serum of animals immunised against typhoid fever affords a medium in which the bacillus coli rapidly multiplies, but in which the bacillus of Eberth rapidly loses its vitality and dies. This can readily be demonstrated if a few drops of the serum of an animal immunised against typhoid fever are added to two tubes of bouillon containing respectively the bacillus of Eberth and the bacillus coli, and these tubes kept in the incubator at the body temperature. At the end of twenty-four hours the tube with the bacillus coli is opaque throughout, and the microscope shows the opacity due to the development and multiplication of colonies of freely-moving living bacilli. The tube containing Eberth's bacillus, on the other hand, remains almost clear, with a slight precipitate at the bottom of the tube and a fine white powder in suspension in the bouillon. Microscopically it is found that the bacilli have failed to form colonies, have lost their power of movement and are deformed and have become aggregated together in small inert masses.

It was shown in 1892 by Widal and Chantemesse that the serum of persons *convalescing* from typhoid fever, like the serum of immunised animals, was a medium that was equally inimical to the development and continued vitality of Eberth's bacillus.

Widal has since investigated whether the serum of the blood of persons during the active period of typhoid fever acted in the same way. The blood serum of six patients with typhoid fever between the eighth and the twenty-first day of the disease was found in every case to act in an exactly similar way to the serum of immunised animals and of individuals convalescent from typhoid in relation to the development of Eberth's bacillus. Widal further found that the serum of persons in health or suffering from other diseases than typhoid fever acted differently from that of typhoid-fever patients. The serum of persons in perfect health and of others suffering from various diseases was drawn, and to it was added the cultivation of the bacillus of Eberth; in every case the bacilli remained active and

isolated, and in no case did they run together and fall into inactive agglomerations, as they do in the serum of typhoid-fever patients.

These investigations afford important assistance in the diagnosis of suspected typhoid fever. A small quantity of the blood serum is drawn, and to the serum obtained from it is added bouillon containing Eberth's bacillus. If the individual is suffering from typhoid fever the colonies run into small aggregations of inactive immobile organisms, which fall to the bottom of the tube, the remainder of the contents remaining nearly clear; if the patient has *not* typhoid fever, the tube becomes opaque throughout, and the microscope shows active, mobile, isolated bacilli.

The simplest way of performing the investigations is to prick with a lancet the finger pulp of the patient and to suck about 3 c.c. of the blood into the hæmocytometer tube, but even $\frac{1}{2}$ c.c. of blood will suffice; this is blown out of the tube and allowed to clot, and its serum added to 10 c.c. of a bouillon cultivation of Eberth's bacillus; in about twenty minutes, if the patient has typhoid fever, the microscope will show the characteristic aggregation of the microbes.

A method even still more simple is to allow a drop of the blood of the suspected person to fall into 10 c.c. of the bouillon cultivation; but this method is not recommended, as one has to wait till the red corpuscles have gradually fallen to the bottom of the vessel.

A more elaborate method, but less feasible in practice, is to draw from the vein in front of the elbow a small quantity of blood by a sterilised syringe, and after allowing the clot to form, mix the serum with the bouillon cultivation in a test-tube in the proportion of 1 part of serum to 10 or 15 of bouillon, and place the tube in the incubator at 98·4° F. At the end of twenty-four hours the tube is nearly clear throughout, with a fine powder suspended in it and a white precipitate at the bottom, which the microscope shows to consist of aggregations of inert bacilli.

In the *Semaine Médicale* of July 8, 1896, and later, *Lancet*, November 14, 1896, Widal states, as confirming the usefulness of his method of diagnosis, that in 200 persons well or suffering from other illnesses than typhoid, the reaction was wanting, and among eight persons cured over a year of typhoid fever the reaction was absent. In the *Semaine Médicale* for July, 1896, Courmont confirms Widal's observations, the serum from nine typhoid patients in every case giving the reaction with Eberth's

bacillus. **Achard** (*Semaine Médicale*, August 5, 1896) found that the milk of a nursing woman who had typhoid fever possessed the same property. **Rendu** (*Soc. Méd. des Hôpitaux*) cites a case in which the clinical signs pointed to typhoid fever, but Widal's reaction showed that this was not so, as did the subsequent course of the case.

10. The treatment of typhoid fever by serum of immunised animals.

Chantemesse (*Soc. de Biol.*, February 22, 1896) immunised several horses against typhoid fever. The serum obtainable from them possesses a power such that $\frac{1}{5}$ of a drop injected into a rat protects it against what would otherwise be a fatal dose of the typhoid poison. Chantemesse utilised such serum in the treatment of three patients having the bacillus of Eberth in the stools. Seven days after the commencement of the treatment these three persons were well. He made systematic examinations of the stools by Elsner's process, the cultures being made with the addition of iodide of potassium, which prevents the development of other microbes.

Borger (*Deut. med. Woch.*, No. 9, February 27, 1896) treated twelve cases of typhoid fever by the injection of serum of immunised sheep. In six cases 20 to 30 c.c. of serum were injected; in the other six cases from 55 to 200 c.c. In four cases the disease seemed to be beneficially influenced by the treatment; two cases died; in no case were any injurious effects produced. The favourable influence was noticed in the four cases injected before the ninth day, while in the other cases the treatment had been commenced later.

Giraud (*Thèse de Lyon*, and *Journ. de Méd.*, September 25, 1896) has used subcutaneous saline injections in hæmorrhage from typhoid fever. A child completely prostrate with hyperpyrexia, and appearing about to succumb after several intestinal hæmorrhages, received two injections of 300 and of 200 c.c. respectively of phosphate of soda, 6 c.c. chloride of sodium, 6 c.c. to 1,000 c.c. distilled water. Ten minutes after the injection the pulse had fallen from 152 to 128, and twenty minutes later it had dropped to 100 a minute. The child recovered. A case is related by Kirstein in which the patient was in a desperate condition—the temperature 104° F., and there was great anæmia from two attacks of hæmorrhage; 600 c.c. of saline injection reduced the pulse rate from 160 to 130, and it improved in tension. The temperature in two hours fell 5° . A few days later, the temperature having risen again, a second injection was given, reducing the temperature $5\frac{1}{2}^{\circ}$. The patient recovered.

The injections are, according to Giraud, useful also in cases where there have not been hæmorrhages, but where there is hyperpyrexia.

[The author can personally attest the value of such saline injections in enteric fever. In one case, where the patient had had two relapses from partaking of forbidden food, and was blanched from hæmorrhage, and almost pulseless, saline injections succeeded in reviving him, and he ultimately recovered. The injections should be repeated if necessary, and given at a higher temperature than usually recommended—not less than 105°.—S. P.P.]

11. Laparotomy for perforation in typhoid fever.

In the *New York Med. Journ.*, January, 1896, a case is recorded in which laparotomy was resorted to by Hotchkiss for perforation, occurring on the tenth day of the disease, in a man of twenty-four. The operation was performed a few hours later, and a median incision having been made, a perforation in the ileum, about 5 inches above its termination, was discovered. The opening was closed by Lembert's method with silk, but the patient died in five hours.

[In the "Year-Book" for 1896, p. 150, a case of successful laparotomy was recorded, the second of twenty cases in which the operation had been resorted to. The prospect of recovery will always be small in such cases, but in the author's opinion it affords the only chance of saving life, and should be resorted to when perforation is certain.—S. P.P.]

12. Phenacetin in typhoid fever.

Bignami (*Gaz. d. Osped.*, March 21, 1896) lost only six of over 200 cases of typhoid treated by 45 grains of phenacetin daily, taken in cachets at intervals of four hours. This treatment is continued for the first week, after which doses of $7\frac{1}{2}$ grains are given every six hours till the temperature remains normal for at least two days. The author suggests that phenacetin neutralises the ill-effects of the typhoid poison and aids its excretion by the sweat.

13. Scarlet fever.

Marmorek (*Annales de l'Institut Pasteur*, January 25, 1896, p. 47) maintains that, though the microbe of scarlet fever has not yet been discovered, there is no doubt of the important part that the streptococcus plays in the disease. It is found always in the throat and in the local lesions of the complications, as in the enlarged glands, inflamed kidneys, pleura, middle ear or endocardium; he has therefore suggested the injection of antistreptococcic serum in scarlet fever to lessen complications and to dissociate the microbe of scarlet fever from its association with the streptococcus. Apart from the streptococcus, he believes that

the action of the microbe of scarlet fever would be much less injurious.

Lemoine (*Soc. Méd. des Hôpitaux; Journ. de Méd.*, May, 1896), from a long series of researches on the complications of scarlet fever, confirms Marmorek's view that, though the specific organism of the disease is still unknown to us, the complications of the disease are dependent on the agency of the streptococcus, which, after being localised in the pharyngeal canal, can invade the skin, the serous membranes, and the kidneys. By permission of Josias the treatment by antistreptococcic serum was tried at the Trousseau Hospital. At first a serum from sheep was used; forty-nine children had a dose equivalent to 5 cubic centimetres of serum injected into the iliac region; later the serum of horses was used, which is much more active, each child receiving 10 cubic centimetres of serum, repeated when necessary; ninety-six children were thus treated. The throat conditions appeared to improve, but the course of the malady, the albuminuria, and the temperature were not modified by treatment, and the mortality was not lessened.

Josias (*Semaine Méd.*, March 4, 1896) of Paris employs lint saturated in a solution of glycerine of resorcin (5 to 10 per cent.) to mop out the pharynx and mouth in the sore throat of scarlet fever; the throat should be previously irrigated with boric acid lotion; the application of the glycerine of resorcin is not caustic, and is well borne by the patients.

14. Injection of blood serum in the exanthemata.

Kélaiditès (*Semaine Méd.*, May 9, 1896), municipal medical officer at Konla, claims to obtain excellent results in small-pox, scarlet fever and whooping-cough by injecting the blood serum of animals that have had these maladies inoculated into them. By introducing the pus from variola pustules, blood and epidermal scales from scarlet-fever cases, or the bronchial secretions from whooping-cough patients, under the skin or into the veins of dogs, these animals, according to Kélaiditès, contract the affection, and *after their complete recovery* the blood serum from their jugular vein has powerful curative properties. Two or three injections of from 10 to 30 c.c., injected directly the rash appears, will abort small-pox and lead to rapid cure; in scarlet fever the disease is shortened, and desquamation begins on the second day. These conclusions were arrived at from the results obtained in thirty cases of scarlet fever or small-pox. The injections of the serum have always been well borne and have not produced any renal complications. Kélaiditès injected the serum into twelve young children, in doses of 5 to 20 c.c., with good effect.

MEDICAL DISEASES OF CHILDREN.

BY DAWSON WILLIAMS, M.D. LOND., F.R.C.P.,

Physician to the East London Hospital for Children, Shadwell.

THE two subjects which, during the past year, as for so many preceding years, have most interested those who give special attention to the treatment of disease in children have been the artificial feeding of infants and the treatment of diphtheria. The prevalence of diphtheria is increasing, especially in towns, in spite of the best efforts of the most enlightened sanitary authorities. The greater number of the many deaths which it causes occur among children ; but as the subject of the treatment of this disease is dealt with in another section of this volume, it will not be discussed here. Serious as is the mortality from this cause, it is very much inferior to that due to gastro-intestinal diseases. This great mortality occurs chiefly among infants. The last *Annual Report* of the Registrar-General, which deals with 1894—a year when the mortality from diarrhœal diseases (diarrhœa, dysentery, and cholera) was lower than in any year for nearly half a century—yet shows that 7,360 infants under one year died of these diseases. The number of children over one but under five years whose death was attributed to this cause was 1,645, while the deaths at all ages above five were only 1,758. It is now generally recognised that the large mortality from gastro-intestinal diseases in infants occurs chiefly among those fed artificially. No apology therefore is needed for giving special attention to questions concerning the best methods of feeding infants by hand.

1. Whole milk—sterilised.

The excellent results obtained by Budin from the routine use of whole—that is, undiluted—milk which has been brought to the boiling-point of water in separate bottles show that freedom, or comparative freedom, from the elements of decomposition is of greater importance to the well-being of the infant than the exact composition of the fluid. His results were mentioned in this section of the “Year-Book” for 1895 (p. 186), and at a later

date were the subject of an address by Sir William Priestley (*Brit. Med. Journ.*, December 7, 1895, p. 1401), which attracted much attention. Budin, Sir William Priestley tells us, holds that "it is much wiser, and more in the interests of the child, to give a small quantity of pure milk properly sterilised than a larger quantity diluted with water." The process of sterilisation followed by Budin is, according to the same authority, to keep the milk, in separate bottles, each furnished with an indiarubber stopper, in a water-bath for forty minutes. It is claimed further that the curd is softer than in raw cow's milk, and "does not form hard concretions in the digestive tube of the infant." Budin's conclusion that whole milk is better than diluted milk was founded mainly on the observation that when diluted milk was given in place of whole milk, the normal progressive increase of weight was not maintained. His experience, however, seems to have been largely with infants in whom the cow's milk was used to supplement a supply of mother's milk deemed to be insufficient.

2. Sterilised milk—advantages and disadvantages.

The advantages and disadvantages of the use of sterilised milk for infant-feeding was one of the topics discussed by the Section of Diseases of Children at the annual meeting of the British Medical Association at Carlisle. In an able paper introducing the discussion, Johnstone Campbell, of Bradford, presented an excellent summary of the present state of knowledge. He pointed out that the advantages which might be claimed for raw milk as compared with that which has been heated, whether for "sterilisation" or "pasteurisation," are that the fat contained in it is in a more perfectly emulsified condition, it is more pleasant to the taste, the free and combined carbonic acid (7.5 per cent. and 2.2 per cent. respectively) not having been driven off, the phosphorus and lime salts remain in their normal condition, and, finally, its casein is more digestible than that of milk which has been heated to 212° F. By "sterilised milk" is to be understood milk which has been raised and kept for a longer or shorter time at the boiling-point of water. Campbell well summed up its main advantage in the following words:—"All the pathogenic, the majority of the non-pathogenic, and the adult forms of even those bacteria which have especially resistant spores, are thereby destroyed." Its main disadvantage he considers to be that the casein is less digestible than that of unsterilised milk. He states that in some experiments on the artificial digestion of diluted milk rich in cream he found that the casein of the unsterilised milk was digested in about half the

time required by the casein of the sterilised milk. The curd produced by the rennet ferment is different also, and he concludes that this relative indigestibility of the casein of sterilised milk is of the greatest importance, for in most cases it renders it necessary that the intervals between the meals should be longer for infants fed upon sterilised than upon unsterilised milk. Indeed, where there is a certain amount of gastric atony, the infant may be unable to take a sufficient quantity of milk for the purpose of nourishment, and thus may undergo a process of slow starvation. He expresses the belief that it is to experience of such cases that the opinion that scurvy rickets may be induced by the use of sterilised milk should be attributed. The views expressed on these heads are worthy of consideration, but they are not in accord with the opinion of other competent authorities, and cannot be accepted without stronger evidence than has yet been advanced. Other disadvantages of sterilised milk Campbell enumerates are: (1) that the taste and smell of the milk are altered; (2) that the greater part of the carbonic acid gas in the milk is driven off, thus inducing an alteration in the composition of the phosphates, and a precipitation of calcium and magnesium carbonates; (3) that some of the fat-globules coalesce so that the emulsion is not quite so perfect as in raw milk; and (4) that the lact-albumen is coagulated and gives rise to the albuminous skin which forms upon the surface as the milk cools, even if it has not been boiled, and contains entangled in its meshes a considerable quantity of fat, thus rendering the milk correspondingly poor in this most important ingredient. Finally, an objection of a somewhat hypothetical nature is mentioned—namely, that any leucocytes which may be present in the milk must be killed during sterilisation. He adds with truth that so little is known about the part played by the leucocytes of milk that it is impossible to say whether their destruction would be a disadvantage or not. In any case it appears difficult to believe that the leucocytes could long survive an active peptic digestion.

3. Pasteurisation.

By "pasteurised milk" is to be understood milk which has been raised to a temperature of about 158° F., and kept at that temperature for a period proved experimentally to be long enough to destroy all or nearly all the microbes which it contained, and has then been cooled rapidly. Campbell urges that pasteurised milk is to be preferred to ordinary sterilised milk on the following grounds:—(1) The digestibility of the casein is diminished only to a slight extent; (2) the taste and smell of the milk are not permanently altered; (3) less carbon dioxide is

driven off; (4) the condition of the fat remains practically unchanged; (5) the lact-albumen is not coagulated.

The all-important question is, of course, whether pasteurisation is as effectual in destroying microbes in the milk as the subjection of the milk to the action of a temperature of 212° F. Upon this point experimental facts do not appear to me to be absolutely conclusive. It is true that a temperature of 158° F. (70° C.), or even 149° F. (65° C.), has been found to free milk, in most if not all experiments, from all microbes that can be cultivated by the plate method, including Loeffler's diphtheria bacillus, Eberth's typhoid bacillus, and the cholera vibrio (Koch's comma bacillus), even when the milk has been very full of microbes. This has been shown by many experimenters, most recently by **Hunter Stewart**, who, in a communication made to the same Section (*Brit. Med. Journ.*, September 12, 1896, p. 626), related some experiments which showed that even ten minutes at 70° C. was sufficient to render milk sterile even when the number of microbes was very large. The method of plate culture, however, would not reveal the bacillus of tubercle if present. It appears to be generally accepted that a temperature of 70° C. (158° F.) will kill this bacillus. The belief has the sanction of the authority of Flügge and of Professor Forster, the Director of the Hygienic Institute of Amsterdam; so confident, indeed, is the latter that in Amsterdam milk which has been pasteurised at 65° C. (149° F.) in bottles for thirty minutes is sold as "Krankheitskeimfrei Milch" (disease-germ-free milk). On the other hand, the experiments made by **Sims Woodhead** for the Royal Commission on Tuberculosis (*Report*, part iii., p. 161) throw grave doubt on Forster's belief that thirty minutes at 65° C. is sufficient, and are not altogether confirmatory of Flügge's statement that thirty minutes, even at 70° C., may be trusted absolutely.

4. Methods of sterilisation.

Woodhead gives the following indications for sterilising milk for domestic purposes. The vessel in which the milk is contained should be placed in a saucepan containing a quantity of cold water equal to the bulk of the milk to be sterilised. The vessel in which the milk is contained should not be closed, and there should be means of stirring it from time to time so as to maintain an even temperature and the diffusion of the cream. "The water should be boiled over a good brisk flame in order that the best results may be obtained, and the heating process should be continued until the temperature throughout the milk has risen to from 88° C. to 92° C.; in most cases this takes place at the end of

about twenty-five minutes ; but in order to be perfectly safe it may be recommended that every quart of milk treated in this fashion should be heated for half an hour ; that is, for about twenty minutes after the water in the outer pan has begun to boil." Milk, he adds, treated in this manner may be looked upon "as perfectly innocuous, even though it should contain the bodies of a considerable number of tubercle bacilli." These conditions are fulfilled in a steriliser designed by **Cathcart**, of Edinburgh. It is of a very simple construction. (See Fig. 1 and p. 88.) It consists merely of a cylindrical block-tin vessel tapering



Fig. 1.—Cathcart's Milk-Steriliser.

slightly towards the base. It is provided with a tap at the bottom, through which the milk is drawn off. The lid fits tightly, and the line of junction with the can is rendered air-tight by an elastic band, which is slipped over after sterilisation is completed. The lid has a wide funnel-shaped aperture through which the milk can be introduced ; this aperture is then closed by a plug of cotton-wool. The sterilising can is placed in a saucepan, of capacity sufficient to receive it conveniently, and containing cold water. This is placed on a brisk fire for half an hour. A special feature of the invention is the stirrer, a screw-shaped piece of tin provided with a long handle which projects through the aperture in the lid ; by its use the milk can be stirred from time to time during the process of sterilisation, to ensure a uniform temperature throughout the milk. The day's supply can be sterilised in this apparatus, and the quantity

remaining in the can is stirred on each occasion before the quantity required for a feeding is drawn off. Hunter Stewart found (*loc. cit.*) that after half an hour on the fire the temperature of the milk was 91° C. (196° F.), and that samples drawn

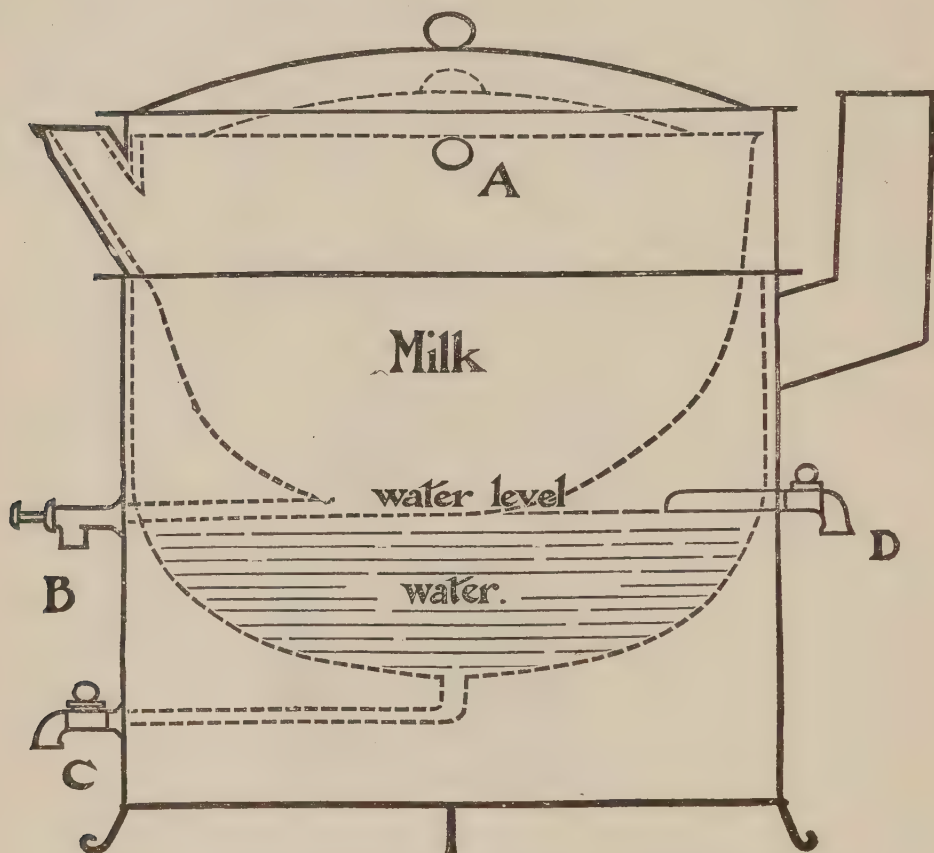


Fig. 2.—Aymard's Milk-Steriliser (Large Size).

A, Steam inlet when taken from the main supply of a building, and the furnace is not in use (this steriliser may also be heated by gas or an ordinary fire); B, milk tap—it has direct communication without bends or angles; C, cold water draw-off; D, level of water required for sterilising; this tap is turned on when filling to show when sufficient water has been introduced.

off by the stopcock at two, four, twenty-four, and forty-eight hours after treatment were all sterile.

Aymard, of Ipswich, has devised a steriliser which presents certain advantages, in particular that it can be made in large sizes suitable for the sterilisation of the milk of a large institution. (See Fig. 2.) It consists, both in its small and large form, of two parts—an outer steam chamber, and an inner receptacle for the milk. The latter has a separate lid, and a spout which passes through the steam chamber to open on the outside. When ready for use, the

covered milk chamber is enclosed entirely within the outer steam chamber. Sterilisation is effected by means of steam, which in the larger sizes is introduced directly into the outer chamber by a pipe connected with the main supply; in the smaller sizes it is generated by heating the water at the bottom of the outer chamber to the boiling-point over a gas burner or ordinary fire. In the smaller sizes about ten minutes are required to raise the milk to a temperature of 200° F. (93.3° C.) after the water has commenced to boil (*Brit. Med. Journ.*, October 10, 1896). As Woodhead has shown (*loc. cit.*) that exposure of even virulent tuberculous milk to a temperature of 185° F. (85° C.) for five minutes is sufficient to render it innocuous, it seems safe to conclude that the apparatus will be effective in getting rid of pathogenic organisms if any be present in the milk. It is stated that by the use of this apparatus of large size the loss of milk during the process of sterilisation is reduced to a minimum, and the taste and smell are little altered. A stirrer could be adapted to the apparatus, but according to the report already quoted there is no formation of scum after five minutes at 200° F., if the lid be kept closed, as is the rule, and only a thin layer of cream formed after six hours. This apparatus differs in principle from Cathcart's inasmuch as it makes no provision for keeping the milk from contamination after sterilisation. Neither apparatus ensures that the milk shall be rendered sterile in the strict scientific sense of the word. This can be achieved only by repeated or fractional sterilisation, and is unnecessary for practical purposes.

5. Pasteurisation of milk.

At the meeting of the American Pediatric Society in Montreal last May R. G. Freeman, of New York, read a paper on low temperature pasteurisation of milk at about 68° C. (155° F.), and described an apparatus which was praised by such authorities as Crozier Griffith, Emmett Holt, and Rotch. Freeman claims (*Arch. of Ped.*, August, 1896) for pasteurisation at temperatures between 65° C. (149° F.) and 70° C. (167° F.) that—(1) it destroys almost all the ordinary air bacteria which occur commonly in milk; (2) it destroys the bacillus tuberculosis, the bacillus typhosus, the bacillus diphtheriæ, and many other pathogenic bacteria; (3) it causes no change in the taste, and avoids those chemical changes in milk which are produced by higher temperatures. Freeman accepts the view that a temperature of 65° (149° F.) for fifteen minutes is sufficient to kill the tubercle bacilli, and his apparatus is devised to obtain a temperature of more than 65° C. and less than 70° C. for half an hour

without the use of a thermometer. It consists of two parts (Fig. 3)—a pail for the water, which is the source of heat, and a receptacle for the bottles of milk, the quantity required for each feeding being in this apparatus pasteurised separately. By using larger bottles the apparatus can be employed for pasteurisation in hospitals. The pail has a lid, and is marked by a groove showing the level to which it is to be filled with water. The receptacle for the bottles of milk consists of a series of hollow zinc cylinders fastened together, and fits into the pail so that the cylinders are for their lower inch immersed in the water. There is also an arrangement by which the bottle receptacle can be

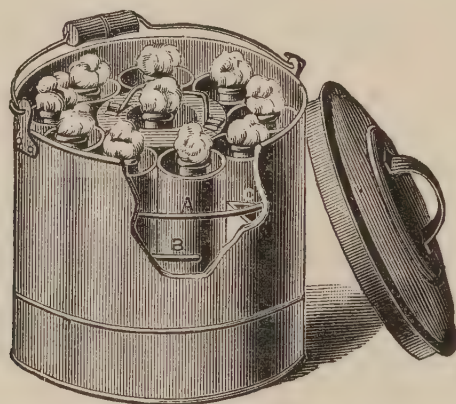


Fig. 3.--Freeman's Low-Temperature Pasteuriser.

Showing the apparatus arranged for heating the milk, but before the pail is covered.
A, wire binding the cylinders together, which rests on the support c, when the milk is being heated.

raised during cooling. The pail is filled with water to the level of the groove, covered and put on a stove, the receptacle for the bottles being left out. The bottles of milk are then filled, stoppered with cotton-wool, and dropped into their places in the cylinders. Sufficient water is poured into each cylinder to surround the body of the bottle. As soon as the water in the pail boils thoroughly it is taken from the stove and set on a mat or table or other non-conductor, in a place where there is not a draught of wind blowing on it. The lid of the pail is removed and the receptacle for the bottles of milk is put into the pail, so that the receptacle rests on the upper continuous supports. The lid is then rapidly put on the pail, and the pail is thus allowed to stand for three-quarters of an hour. During the first fifteen minutes the temperature of the milk rises to about its maximum, or above 65° C., the point desired for pasteurising, and remains there for the following thirty minutes. During the next fifteen minutes it falls about one degree. At the end of forty-five

minutes the cover of the pail is removed, the receptacle is lifted and given a turn so as to rest on the upper supports (Fig. 4), thus bringing the top of the cylinders containing the bottles above the level of the pail. The pail is then put under a cold-water faucet, and the water is allowed to run into the pail and overflow, but it should not run into the cylinders. Thus the hot water is replaced by cold water, and in fifteen minutes the milk in the bottles is of about the temperature of the cold water used. The bottles may then be put into a refrigerator until required for feeding. This rapid cooling is, in Freeman's experience, a most

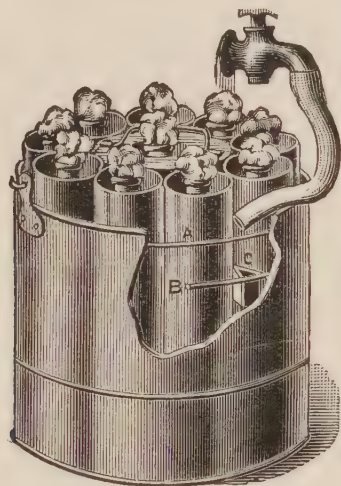


Fig. 4.—Freeman's Low-Temperature Steriliser.

Showing the apparatus arranged for cooling the milk after pasteurisation. A and C, as in Fig. 3; B, one of three short wires which rest on C, when the receptacle is raised for cooling as shown.

essential part of a low temperature sterilisation, the importance of which is apt to be overlooked.

6. The value of sterilised milk.

There is still a good deal of difference of opinion as to the value of sterilised milk and, though to a less extent, of pasteurised milk. Sterilised milk has been held responsible for the production of infantile scurvy (see "Year-Book," 1895, p. 187), rickets, and of not preventing gastro-intestinal disorders. It is certain that it is often exceedingly disappointing both in hospital and in private practice. In some cases this may have been due to failure to obtain milk of good quality in the first place. If milk is diluted or partly "separated," or already beginning to decompose when put into the sterilising apparatus, it will not be good milk when it comes out, even though sterilised. There are great variations in the number of microbes in milk as delivered to

consumers.* **Sacharbekoff**, in the report of the St. Petersburg Municipal Laboratory (*Nature*, 1896, No. 1,406), states that the worst samples were got from small retailers who bought their supplies second hand, and this is the usual experience. He found in such milk the bacillus of tubercle, the staphylococcus pyogenes aureus, the bacillus coli communis, and various saprophytic microbes which were capable of decomposing the milk and so producing various toxic bodies. Flügge states that the bacterium which he regards as the probable cause of cholera infantum has very resistant spores, which are destroyed only by a temperature of 212° C., maintained for from four to six hours. On the other hand, the sterilisation or pasteurisation of milk used for the artificial feeding of infants does undoubtedly sweep out of the milk the immense majority of all microbes, and, as in the case of the bacillus of tubercle, diminishes the virulence of some of those which may by accident occasionally survive. By so doing also it stops decomposition, so that milk not of first-rate microbial purity, sterilised, for example, in Cathcart's steriliser, will be quite sweet, though not absolutely sterile, after keeping for a day at the height of summer. Further, a slight error in preparation may favour the production of symptoms of scurvy rickets. A special preparation, used largely in Germany, is Rieth's albumose milk, and a considerable number of cases are on record in which infants fed exclusively on this preparation have developed this condition. **Hamburg** (*Deut. med. Woch. Ver. Beil.*, 4, 1896) has related an interesting observation on this point. Rieth's albumose milk is superheated milk, to which albumen and a little potassium bicarbonate are added. This salt was added in such proportions that the infant took a little over 6 grains a day. If taken regularly, potassium bicarbonate is itself capable of producing scorbutic symptoms. Potassium was replaced by sodium bicarbonate, and the quantity of the latter added was so small that the infant took only $1\frac{1}{2}$ grain daily. During the nine months after this change was made, no case of Barlow's disease had been observed among the children fed on the albumose milk.

* The number of microbes cultivable from samples of milk is given as follows (per c.c.): Munich, 4,000,000; Würzburg, 7,535,000; St. Petersburg, 115,300,000; Giessen, 169,632,000; so that the dwellers in a small country town are not necessarily so well off as those in a large city. Bitter has proposed that 50,000 microbes per c.c. should be taken as a standard of the number to be permitted in a public milk supply. But the suggested standard, even if it were practicable to enforce it, would be of doubtful utility, since the quality of the microbes, as well as their number, must be taken into consideration, as well as the length of time the milk is kept after purchase.

7. Modified milk.

Somewhat contradictory reports as to the practical value of the so-called "fat-milk" devised by Gärtner have been published. The mode of preparation and the composition of this milk were given in the "Year-Book" for 1895 (p. 184). Milk is diluted with an equal quantity of water, and placed in a centrifugalising machine so adjusted that the milk is divided into two equal portions, one of which contains nearly all the cream. As the quantity of fat in cow's milk is in round numbers half and the quantity of proteid twice the amounts in human milk, the result of the division by the centrifugaliser is to supply a milk which agrees very nearly in the amount of fat and proteid which it contains with human milk. The milk-sugar, however, is only about a third of what is required, and, to obviate this, a sufficient quantity of a concentrated solution of milk-sugar is by some added after centrifugalising, and before sterilisation.

Cautley has had made* (*Lancet*, January 11, 1896) a milk on this principle, but instead of diluting the milk before centrifugalisation with an equal quantity of water, it is diluted with an equal quantity of a 10 per cent. solution of milk-sugar. The quantity of fat varies, of course, with the richness of the original milk, and Cautley found that it should not be greater than 3·7 per cent. The fat-milk (or cream-milk) is rendered faintly alkaline, pasteurised, and supplied to the consumer in air-tight bottles. He found that it was well taken and digested by infants.

Keilmann (*Jahr. f. Kinderhklde.*, Bd. xli., 312) in a very careful paper also gives a very favourable opinion on fat-milk, which he used with the addition of milk-sugar and after sterilisation. He found that infants during the first two weeks of life, as well as at a later age, gained weight more rapidly and steadily than with the ordinary diluted milk, though not so rapidly as on the breast. He noticed also that the stools much more nearly resembled those of infants fed exclusively at the breast.

Boissard (*Rev. des Mal. de l'Enf.*, August, 1896, p. 416), who compared the results from sterilised milk and from fat-milk, did not observe that the latter was better taken or caused a greater increase in weight, but digestion appeared to be easier and more complete, as was indicated by the cessation of fetidity in the stools and the disappearance of curd masses.

Popper (*ibid.*) reports results from Monti's clinic in Vienna, which were not at all in favour of the fat-milk, only three out of twenty-five infants having done really well on it.

Thiemich and Papiewski (*Jahr. f. Kinderhklde.*, Bd. xli., 372),

* By the Aylesbury Dairy Co.

from an experience in thirty-seven infants in the Breslau clinic, came to the conclusion that the fat-milk gave results neither better nor worse than diluted milk. Keilmann's inquiry seems, however, to have been more carefully conducted than any of the others, and the fat-milk is, theoretically, so good a food for infants that it is certainly deserving of extended trial.

Ashby has devised a simple domestic method of making an imitation of it (*Dis. of Child.*, London, 1896). The quantity of milk required for the day or half a day, obtained in as fresh a condition as possible, is put into a bottle marked so that half the quantity of milk can be known. It is stoppered with a plug of cotton-wool, and is allowed to stand at the ordinary temperature of the room for two hours. A good deal of the cream rises, and at the end of the time the lower half—i.e. the "skim-milk"—is siphoned off and replaced by an equal quantity of a 7 per cent. solution of sugar of milk. The mixture in the bottle is then sterilised. To any milk mixture made from cow's milk it is, as Jacobi has pointed out, desirable to add a little common salt, as the quantity in cow's milk is too low.

8. Antiseptics in gastro-intestinal diseases.

In a paper read before the Royal Medical and Chirurgical Society (March 24, 1896) Hayward and Buttar expressed the opinion that antiseptic drugs gave the best results in the subacute or chronic diarrhœas, which may be met with at any time of the year, but frequently follow acute summer diarrhœa. They endeavoured to distinguish the cases in which salol and naphthalin respectively were the most appropriate. Salol, they held, should be given when acid vomiting, an irritable and furred tongue, fever, and undigested food in the motions point, perhaps, to a stomach and upper bowel affection; naphthalin when symptoms such as slimy offensive stools, straining, tenesmus or prolapse of rectum, absence of vomiting, clean smooth tongue, and generally well-conditioned and bright aspect of the patient, out of proportion to the frequency of the stools and duration of the attack, point to affection of the colon. They pointed out also that to obtain the full advantage of any antiseptic it must be administered at short intervals, each dose being as small as possible. Salol may be given in powder, gr. i. to iv.; naphthalin in mucilage, or milk, or malt extract, gr. i. to ii. (to an infant of one year), every two, three, or four hours. As an adjuvant to antiseptics, and in cases in which an astringent is indicated, Moncorvo (*Brit. Med. Journ. Epit.*, i., 1896, No. 34) recommends **tannigen**, a compound of tannin and diacetyl, insoluble in water and acids, but broken up into its constituents in an alkaline solution. It therefore first exerts its

astringent action in the duodenum. He used it in twenty-one cases of intractable diarrhœa, associated usually with malaria, and in many cases complicated with congenital syphilis or tuberculosis. In nineteen cases that could be traced the results were without exception satisfactory.

Bachus (*ibid.*, No. 320) treated forty-seven children, of whom forty-one were under two years, with this drug. Of these forty-one, four died, and two were not improved, but in the remaining thirty-five the diarrhœa stopped in two or three days. In two of the fatal cases the children came under treatment late. The diet was regulated, and in severe cases three calomel powders were given before the tannigen was commenced. The dose given was about gr. iv. during the twenty-four hours. It can be prescribed suspended in mucilage, or merely stirred into water or milk. It can be combined with salol, salicylate of bismuth, and other anti-septics, and Moncorvo strongly recommends such combinations.

Escherich (*Pediatrics*, September 15, 1896) also speaks well of this drug, but he thinks that it should not be given in acute inflammations of the bowel, nor when the stools contain much mucus, so that he would limit its use to a comparatively small number of cases.

In severe mucous diarrhœa (colitis), copious injections have been used with more or less success by many practitioners. **Dauchez** (*Rev. des Mal. de l'Enf.*, May, 1896) used with success to medicate the water sodium hyposulphite (5 per cent.), boric acid (3 or 4 per cent.), or tincture of benzoin (5 per 300). The fluid should be tepid, and a pint or more should be introduced very slowly by means of an irrigation apparatus, to which an œsophageal sound or large catheter is fixed for introduction into the rectum. Dauchez introduced the sound for eight or nine inches into the rectum, and had his reservoir nearly two feet above the level of the patient, but he controlled the rate at which the fluid entered by means of a tap.

SHORT NOTES.

9. Acute bronchitis.

To diminish the amount of secretion, and lessen the severity and frequency of cough, **Dillon Brown** recommends (*Ped.*, April 15, 1896) a combination of phenocoll with camphor and caffein—℞ Phenocoll, gr. xv. to xxx. ; camph. monobromat., gr. ii. ; caffein citr., gr. ii. : for twelve powders, one to be taken every four hours. **W. S. Christopher** (*loc. cit.*) recommends phenacetin, gr. i., and caffein, gr. $\frac{1}{12}$, in powder, every four hours. **Crook** (*ibid.*, July 15, 1896) recommends phenacetin as a sedative for irritative cough ; and when

an expectorant effect is desired, adds ammonium chloride, the drugs being given in powder with extract of liquorice and white sugar. **Renaut** (*Rev. des Sciences Méd.*, October 15, 1896) praises the systematic use of warm baths in the treatment of bronchitis in infants. The rectal temperature is taken every three hours, and whenever it reaches 102° F. the child is given a bath for seven or eight minutes at 100° F. If there is much congestion of the face, the head is enveloped in a handkerchief, and kept moist by pouring a small stream of water, at the temperature of the room, on to it. The child is then dried quickly with a warm towel and put back to bed. Of the utility of warm baths, even in out-patient practice, I can speak favourably.

10. Whooping-cough.

Vargas, of Barcelona, reports favourably on phenocoll hydrochlorate after an experience of the drug in forty-two cases (*Jahrb. f. Kinderhlde.*, Bd. xlii., p. 502). The effect was produced rapidly, so that the number of attacks was lessened on the day after the remedy was begun. It reduced not only the number but the severity of the attacks. It is soluble in water (1 in 17), but is best given in a mixture containing mucilage. **Fede** (*ibid.*) recommends brushing the throat and larynx with the following:—Resorcin, gr. xxx.; cocaine hydrochlorate, gr. v.; water and glycerine, equal parts, to ʒj. The application must be made frequently. **Murrell** (*Ped.*, April 15, 1896) used oil of amber both internally and externally. He orders a teaspoonful to be rubbed in along the course of the spine night and morning. He also gives the oil internally, the dose being 3 to 10 drops every four hours, either on a piece of sugar or crumb of bread; or in the following mixture:—Oil of amber, ʒx.; powdered gum acacia, ʒj.; syrup of orange flower, ʒii.; oil of anise, ʒiii.; water to ʒj. **Eröss** (*Jahrb. f. Kinderhlde.*, loc. cit., p. 503), from an experience of 874 cases treated in various ways, came to the conclusion that bromoform was superior to all other remedies at the height of the convulsive stage. Its good effect began to be noticeable in one or two days, and by the fourth or fifth day the condition of the patient was very much improved. In later stages it was also useful, and in children who, several months after the beginning of whooping-cough, still had spasmodic cough, the paroxysms were brought to an end in a week or ten days. **Marfan** (*Rev. des Mal. de l'Enf.*, April, 1896) also writes in favour of bromoform, which he found superior to antipyrin and to belladonna, the only two remedies which he had previously found worthy to be retained. The dose he gives at first is 4 drops during the twenty-four hours for each year of the child's life.

In children between five and ten he begins with 20 drops in the twenty-four hours. No improvement is to be expected until the third or fourth day. If the remedy is to have a beneficial effect, the number and severity of the paroxysms diminish, vomiting ceases, and appetite returns. If these effects are not produced, he increases the dose by 2 or 3 drops a day until the daily quantity is doubled. In the cases, comparatively few, in which the drug failed the subsequent administration of anti-pyrin was successful. The prescription he used was, in British weights and measures—bromoform, 48 drops; almond oil, 3v.; tragacanth, 3ss.; gum arabic, 3j.; cherry laurel water, 3j.; water to 3iii. Add the bromoform to the oil and make an emulsion with the gums; 3j. contains ℥ ii. Eröss (*loc. cit.*) also recommends very strongly insufflation with powdered benzoin. In about 60 per cent. of the cases, after two insufflations (given daily) the attacks, at the height of the convulsive stage, diminished to five or ten a day. The powder must reach not only the anterior cavities of the nose, but also the nasopharynx, and the insufflation must therefore be given through both nose and mouth. Labbé and Oudin (*ibid.*) state that twenty-two cases treated during 1895 were all benefited by ozone inhalations, which they believe diminish the duration, the intensity, and the number of attacks.

11. Perlèche is a contagious inflammatory affection of the lips, especially of the commissures. It is contagious, and occurs in epidemics in schools and institutions. There is swelling of the affected part, followed by the appearance of a white membrane, which is accompanied usually by a fissure. If this bleeds, blood-crusts form. After removal of the crusts, if these be present, the fissure and surrounding parts should be touched with the nitrate-of-silver stick, and treated subsequently with white precipitate ointment, or with the following ointment:—Hydrarg. sozoidol, 1 part; vaselin, 100 parts (Siefert in Penzoldt and Stintzing's *Hdbch. d. spec. Therap.*, Bd. iv., p. 12). Fest (*Ped.*, July 15, 1896), who asserts that the conjunctiva may become infected, uses as a first application peroxide of hydrogen, or a weak solution of nitrate of silver, followed by the frequent application of boro-glycerol. A borax ointment, made with equal parts of lanolin and olive oil, is a useful application in this as in other inflammatory affections about the lips and teeth in children. Lemaistre (*Rev. des Mal. de l'Enf.*, May, 1896), who believes that the disorder is due to a special microbe, the streptococcus plicatilis, recommends the application of solution of sulphate of copper (1 per cent.), or of an ointment containing extract of opium, gr. $\frac{1}{2}$; copper sulphate, gr. iii.; vaselin, 3j.

ANÆSTHETICS.

By DUDLEY W. BUXTON, M.D., B.S., M.R.C.P.,

Anæsthetist and Lecturer on Anæsthetics in University College Hospital, Anæsthetist to the National Hospital for Paralysis and Epilepsy, Queen's Square, and to the Dental Hospital of London.

1. Local anæsthesia.

The necessities of practice often compel the adoption of other means of lessening the pain of operations than recourse to general anæsthesia. Ophthalmic surgery can be conducted largely without chloroform or ether, although for removal of the globe, and for most operations upon nervous patients, the use of a general anæsthetic is obligatory. In cases in which it is possible and desirable to adopt local anæsthesia, one of several methods may be adopted. To *Schleich* belongs the credit of first systematising the method of Infiltration. The plan depends upon the fact that if an artificial œdema is produced in a part, very minute quantities of cocaine, morphine, or other local anæsthetic, will render the infiltrated area quite insensitive. Solutions of three strengths are employed :—

I.—R	Cocain. Hydrochlor.	...	...	...	...	·2
	Morphin. Hydrochlor.	...	...	...	...	·025
	Sodæ Chlorid.	...	...	...	...	·2
	Aq. destill. et steril.	...	...	...	ad 100	

Add 2 drops of a 5 per cent. solution of carbolic acid.

This solution is used for inflamed or hypersensitive areas. In the second solution the strength of the cocain. hydrochlor. is only ·1, the other ingredients being the same as in Solution I. It is used for non-inflamed areas, and is the routine solution. Solution III. is employed when very extensive areas of tissues are involved, giving rise to the fear of excessive dosage if stronger solutions are employed. It consists of—

III.—R	Cocain. Hydrochlor.	...	...	...	...	·01
	Morphin. Hydrochlor.	...	...	...	...	·005
	Sodæ Chlorid.	...	...	...	...	·2
	Aq. destill. et steril.	...	...	...	100	

Add 2 drops of 5 per cent. solution of carbolic acid.

The morphine lessens the pain which otherwise follows the injection before the cocaine has had time to act. Of course the carbolic acid is used as a preservative. Schleich's technique is important. He uses a Pravaz syringe, and injects *slowly, endodermically*, after having carefully disinfected the skin or mucous membrane. Where it is deemed necessary, the point of injection can be rendered painless by ether spray, ethyl chloride, or a 5 per cent. solution of carbolic acid. A bulla rises over the seat of the first injection, and into the periphery of this fresh solution is injected, until the whole area is infiltrated. If deep tissues are to be cut they must be injected methodically. Even periosteum and nerve trunks are rendered anæsthetic in this way. In the course of extensive dissections, when arteries have to be picked up, they are touched with 5 per cent. solution of carbolic acid and seized with artery forceps, themselves dipped in carbolic-acid solution of this strength. In the same way Schleich recommends that exposed nerve trunks should be brushed with the carbolic-acid solution. The anæsthesia follows immediately on infiltration, and persists for about twenty minutes. Fresh injections will lengthen the anæsthesia to any required period. **Reclus**, in France, and **Landerer**, in Germany, have used Schleich's method with success, and speak of it with approval. **Halsted** has also experimented and come to a favourable opinion of the infiltration method. It appears to act in part mechanically by stretching the nerves in the infiltrated areas, while the presence of the cocaine and morphine renders the mechanical pressure on the tissues painless.

Injection of simple water causes slight anæsthesia, but is itself painful. Normal saline causes no pain and no anæsthesia; but $\frac{1}{5}$ per cent. saline solution will produce paræsthesia and anæsthesia over infiltration areas. Solutions of sugar, bromide of potassium, carbolic acid, and caffein will produce anæsthesia, but occasion initial irritation. It is important to prepare the solutions fresh, to keep them in ice until used, and to see that they and the syringe are absolutely sterilised before use. Injections must never be made directly into abscess cavities or brawny inflamed areas. The fluids are not absorbed in such positions, and only tend to increase tension. **Bransford Lewis** has employed Schleich's method with success for minor surgery, but does not speak favourably of it in major operations. **Lund** (*Boston Med. and Surg. Journ.*, February 6, 1896) gives the same experience. Schleich, however, maintains that when the details of the method are properly carried out—which is not so easy as it appears—failure seldom occurs. When extensive areas have to be manipulated, or brawny tissues interfered with, very slow injections are

required, and the operation has to be stopped from time to time to allow of further injections. The method is especially valuable when loose, soft, and readily infiltrable tissues are to be dealt with, and has proved successful in the following operations (Lund):—Removal of fatty tumours, epitheliomata, circumscribed hæmorrhoids, subcutaneous tumours, wens, etc. It is not advisable for nervous persons, nor when muscular relaxation is required. It is also recommended for kelotomy. **Loup** (*Bulletin Médicale*, 1896) injects the tissues to be operated upon with sterilised olive oil, and accounts for the resulting anæsthesia by the ischæmia of the nerve filaments produced by the mechanical pressure of the oil. **Gleitsmann** injects antipyrin to lessen pain during operations. For minor amputations **C. M. Daniels** (*Journ. of Amer. Med. Assoc.*, March 28, 1896) injects 10 to 15 minims of 2 per cent. of cocaine. He first sterilises the finger and ties a wet bandage round it. He introduces the point of the needle upon the dorsal aspect and expels three or four drops of the solution. The needle is then partly withdrawn, lateralised, more solution is injected, and this is repeated in the opposite direction. The needle is then introduced upon the palmar aspect, and this region is rendered anæsthetic in a similar manner through one puncture. He “milks” out the cocaine before removing the wet bandage. In this way $\frac{1}{3}$ to $\frac{1}{4}$ gr. is enough to render a minor amputation quite painless. This plan recalls the highly ingenious method devised by **Leonard Corning**, and termed the incarceration method.

In ophthalmic practice eucaine has found many advocates. Unlike cocaine, it does not produce mydriasis and paralysis of accommodation (Gaetano Vinci, of Messina. See *Deutsch. med. Zeit.*, April 27, 1896). No ischæmia follows its use, and hence it is of little value in inflammatory conditions. Eucaine does not become impure by keeping, and, unlike cocaine, is not vitiated by the boiling necessary for sterilising. **Kiesel** (*Zahnärzt. Rundschau*, April 5, 1896) sums up the advantages of eucaine over cocaine thus: (1) Eucaine does not depress the heart; indeed, the hearts of nervous persons appear to be rendered steadier by its use. (2) The anæsthetic area is larger and more persisting; even muscles become insensitive after superficial injection. (3) It is much less toxic; 30 grains have been used without untoward results. Its solutions keep well, and are less costly. **Vinci**, as a result of experiments upon animals, found that initial excitation of the central nervous system is followed by paralysis. If a toxic dose has been given, this paralysis culminates in death. Nervous irritability with heightened reflexes and incoördination precedes this paralysis. Small doses given to rabbits induced increased reflex excitability;

the respiration became more rapid, but weaker. Medium doses ($\frac{1}{3}$ grain to $\frac{1}{2}$ grain to every 35 oz. of body weight) caused repeated tonic and clonic spasms, dyspnœa, opisthotonos, and paresis of hind limbs. Death results from paralysis of respiratory muscles. The heart is slowed through vagal action, but the heart beats for some time after cessation of respiration. Clinically, either a solution of the crystals of the hydrochloride from a watery solution or those from a methyl-alcohol solution may be used. The latter, however, produces some palpebral irritation. A 2 per cent. solution is instilled, and anæsthesia results in from two to three minutes. Some regard eucaine as inferior to cocaine.

2. General anæsthesia.

Choice of Anæsthetic (see also chap. ii., p. 12, in the author's "Anæsthetics," 2nd Edition, and Hewitt's "Anæsthetics," chap. iv., p. 60). In almost every case after the patient is rendered anæsthetic, *Silk* (*Guy's Hosp. Reports*, 1895) continues with ether. For brief operations—*e.g.* dental, moving joints, opening and scraping abscesses, sinuses, removing tarsal and sebaceous cysts, etc.—nitrous oxide passed over ether (etherised gas) is sufficient. This can be given from a Clover's inhaler (see "Year-Book of Treatment," 1894, p. 205) or a Rumboll-Birch inhaler ("Year-Book of Treatment," 1896, p. 177).

When a more prolonged anæsthesia is necessary, the following modes of inducing and maintaining anæsthesia are recommended. In the aged and plethoric the A.C.E. mixture should be used to induce anæsthesia, and ether, chloroform, or the A.C.E. mixture then employed throughout the operation. This mixture may be administered from a Skinner's cap, a cone, or the Rendle mask ("Year-Book of Treatment," 1895, p. 206). It is less satisfactorily given from a towel, lint, etc., and should not be exhibited from a closed inhaler. The ether may be given from a Clover's smaller portable inhaler, from an Ormsby's inhaler, or from a Rumboll-Birch inhaler. The chloroform may be given from the inhaler described below, or a Hyderabad cone ("Year-Book of Treatment," 1895, p. 205), a modified Junker ("Year-Book of Treatment," 1895, p. 204), or a Vajna's mask ("Year-Book of Treatment," 1896, p. 180), or from a fold of lint or towel.

When gross cerebral lesions exist, the induction should be by chloroform, and this should be kept up throughout. The same may be said for acute or very recent lung disease. In chronic lung disease and in emphysema the induction should be by A.C.E. mixture. If there is no very active catarrh, these patients can usually be kept under with ether; but if this causes cough or troublesome secretion, the mixture or chloroform may be

substituted. There is, however, a decided danger in giving chloroform to persons who suffer from pronounced emphysema associated with dilated and weakened heart.

In heart disease, Silk takes cognisance of "uncompensated" or insufficiently compensated cases and "compensated" cases, and for the former he recommends the A.C.E. mixture or chloroform throughout. This view is not that of the writer, who prefers in most cases to commence the inhalation with etherised gas, rapidly passing to ether given with oxygen; or to commence with A.C.E., and go on with ether, giving it sparingly with a good deal of air or oxygen.

In compensated cases Silk would commence with A.C.E. and go on with ether. Here again etherised gas may be used. In cases of vascular degeneration the induction should be with the mixture. If, however, etherised gas be used, and rapid anæsthesia is thus effected, the stage of excitement and struggling being prevented, the patient is saved the risk to his arteries caused by straining and struggling. In renal cases Silk uses A.C.E. throughout. In other cases gas and ether are recommended. **A. Eisendraht's** results (*Deutsch. Zeitsch. f. Chir.*, 1896) from 130 patients seem to show that ether is at least as safe as chloroform in renal cases; for although pre-existing albuminuria was increased more frequently after ether, it was present in 25 per cent. of healthy patients after ether, and in 32 per cent. after chloroform. Cylindruria occurred with equal frequency, whichever anæsthetic was employed. A writer in *Il Policlinico*, referring to the effect of ether and chloroform upon the kidneys, states that the former produces less permanent injury to the renal epithelium. **Keefe** (*Boston Med. and Surg. Journ.*, November 28, 1895) considers that the preparation of the patient for the anæsthetic is insufficiently considered. In all cases of weak heart he gives digitalis for the twenty-four hours antecedent to the operation, and 4 grammes of the tincture hypodermically before the administration. It appears to me that this dose is undesirably large, and liable to produce sickness. He insists upon the importance of measuring each quantity of the anæsthetic before giving it, and graduating the dose according to the age and sex of the patient. He watches the face, pulse, and respiration in the order named. He asserts that by mixing chloroform and ether in the proportion of 2 to 5, he avoids the stage of excitement. For restorative measures he adopts the following:—Withdrawal of the anæsthetic, frequent momentary inversion of the patient, artificial respiration, injection of strychnine, application of heat, the use of digitalis, the battery, sponging the face and neck with

cold water. Referring to the especial dangers of general anæsthesia, **Rochier** (*Lyon Médical*, March 10, 1896), in certain kinds of operation, gives particulars of twenty-three cases in which serious symptoms arose, and twenty-two of the patients died. In seven cases of intestinal obstruction all died, nine deaths under chloroform, ten under ether when operations for the relief of hernia were in progress; of eight deaths in operation for intestinal obstruction ether was used seven times and chloroform once. Death arose from (1) reflex syncope from irritation of a sensory nerve; (2) respiratory syncope (tertiary or toxic apnœa) occurred, due in part to the patient's condition; (3) suffocation from liquid entering trachea. On the other hand, it must be recognised that (1) means insufficient anæsthetisation, and (2) overdosage, both conditions arising usually from faulty administration; while as regards (3), **Poncet** has shown that the contents of the stomach commonly find their way into the trachea and air-passages during the death-struggle, and some of Rochier's cases may have been simply instances of this phenomenon. Still, in all cases where practicable, it may be as well to withhold a general anæsthetic, if the patient is very far gone, supposing the method of Schleich is of much use in kelotomy. The obvious drawback to it in these cases is the loss of time involved, itself often fatal to the patient.

Estes contributes an important paper on "Surgical Shock" (*New York Med. Journ.*, February 9, 1896) and its bearing upon the selection of an anæsthetic for persons suffering from shock. He discriminates (1) immediate, antecedent or psychical shock—a condition which is always improved by giving the anæsthetic; and (2) secondary shock, or that consequent upon hæmorrhage, a condition which is not benefited by the anæsthetic. When ether or chloroform has to be given, he prefers to administer a hypodermic of morphine just before the operation, as by so doing less anæsthetic is rendered necessary. He palliates shock by hypodermics of strychnine. Commencing with $\frac{1}{60}$ gr., this dose is repeated during the operation every fifteen or twenty minutes, and is kept up, although at longer intervals, and even after the patient has been put to bed. Hot saline rectal injections are also given. Digitalis he finds useful, but alcohol increases the shock, and is harmful. **Estes** insists that the anæsthetic should be given for these cases in small quantity largely diluted with air, and without any "smothering," and should be discontinued as soon as the actual cutting is finished.

3. Mixed anæsthetics.

Sherman (*Boston Med. and Surg. Journ.*, April 30, 1896) has

found Fraenkel's method of anæsthetising useful in the operation for removing post-nasal adenoid growths. The patient is seated upright in a chair, or, if a child, is held upright in an assistant's arms. He is anæsthetised lightly, the reflexes being unabolished. In the primary stage of anæsthesia, the mouth is opened, the tongue depressed with a long slender spatula, and the operation rapidly performed. The anæsthesia lasts a minute or so, long enough, it is alleged, for removal of the growths. Fraenkel employs bromide of ethyl, but Sherman prefers ether.

Rosenberg (*Berl. klin. Woch.*) adopts the following method, as he believes that many of the deaths from chloroform are due to reflex heart failure following irritation of the naso-pharynx by the stinging vapour of chloroform:—The patient is made to sit, not lie, down; then, leaning forward, he blows his nose strongly. A powder (10 per cent. cocain. hydrochlor. in some inert substance) is given, and about a centigramme is snuffed up. This is repeated in about three minutes, when the anæsthetic is administered.

Rosenberg finds, when this plan is adopted, that—(1) the commencement of anæsthesia is far less disagreeable, and is less resisted; (2) the stage of excitement is abrogated, or is lessened, except in alcoholics; (3) vomiting and retching are absent during anæsthesia; (4) on awakening there is no haunting smell of ether or chloroform.

4. Oxygen and chloroform.

Elder (*Col. Med. Journ.*, June, 1896) found that this mixture, which is a revival of **Neudörfer's** method, was unsatisfactory. The patients were rarely got fully under. No complete muscular relaxation was obtained. The good recovery and absence of after-effects were, he alleges, due to the incomplete anæsthesia and minimal quantity of chloroform used. "To argue that oxygenised chloroform is safer for this reason is," he says, "to insist that it is better because it is less efficient." **Parvin** (*American Therap.*, May, 1896) has tried the plan of **Prof. Landau** of Berlin, who administers oxygen *after* ether. He finds if, at the conclusion of an operation, the patient inhales oxygen freely for a few moments, it prevents headache, nausea and vomiting. **De Hart** (*Journ. of Amer. Med. Assoc.*, June 20, 1896) speaks strongly in favour of the use of oxygen with ether and chloroform and A.C.E. mixture, describes his apparatus, and reports a series of cases. **Morrison** (*Boston Med. and Surg. Journ.*, April 16, 1896), while advocating the use of this mixture, reports a case in which the use of oxygen apparently produced convulsions.

5. A modified chloroform inhaler.*

Figs. 1 and 2 represent an inhaler which Messrs. Mayer and Meltzer have constructed for the author. It consists of a chloro-

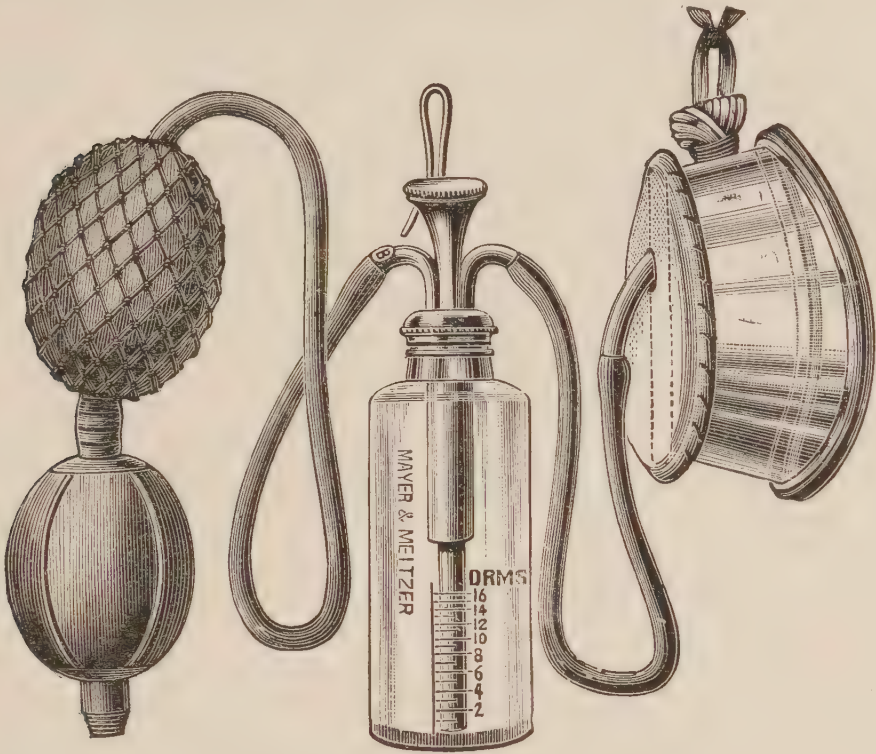


Fig. 1.—Chloroform inhaler, showing the apparatus, the bottle, bellows, face-mask and tubes.

form bottle and hand bellows, similar to Junker's apparatus, only fitted with the writer's modifications and the glass mask used by Vajna. This mask, however, is adapted with a perforated tube running under the flannel diaphragm, through which the air and chloroform vapour is pumped instead of having the fluid dropped upon the diaphragm as with Vajna's arrangement. The mask has all the advantages of an absolutely clean aseptic inhaler, and yet allows of accurate dosage. By its use no chloroform can trickle down the face, nor can the diaphragm become wet and so impervious to air and vapour, as happens in the mask as used by Vajna. The patient's face and lips can be seen throughout the inhalation.

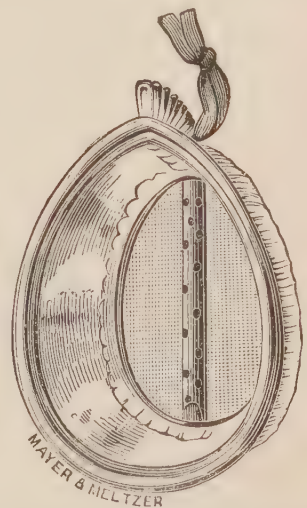


Fig. 2 shows the mask as seen from below.

* *Brit. Med. Journ.*, October, 1896.

6. After-effects.

In *respiratory failure*, Hare recommends dashing ether upon the abdomen; the cold produced by the rapid evaporation induces a deep inspiration. Schilling (*Münch. med. Woch.*, January, 1896) injects $\frac{1}{2}$ to 1 grain of camphor to alleviate *ether collapse*. He employs the following solution:—Camphor, 1 part; olive oil, 10 parts.

Lewin's method of making the patient breathe from a cloth soaked in vinegar answers well in checking *sickness following chloroform*. He believes that a chemical change takes place between the expired vapour and the vinegar. Whatever theory is held, in practice the writer has found the plan of value. The use of inspirations of oxygen to counteract after-effects is referred to elsewhere.

7. Bromide of ethyl.

Hennicke, working under Dreser's direction, experimented with white rats (*Med. Chron.*, January, 1896). He found that after inhaling a vapour 2·3 per cent. for twenty-two to thirty minutes the rats became anæsthetised, and in time recovered, but death ensued during the night. Jendritza has described a case occurring to a human being, which he believes to be of similar nature. The patient, a woman aged eighteen, took bromide of ethyl for tooth extraction. She regained her normal condition, but later in the day became unconscious, with dilated pupils and locked jaws. Recovery recurred in ninety minutes, speech returned in 120 minutes. Dreser believes that the drug is decomposed in the organism and a poisonous compound formed. His theory that saponification of the bromide occurs in the tissues seems to be confirmed by his experiments.

8. Pental.

Prince Stallard, in a paper read before the Society of Anæsthetists, gives his experience of pental in 150 cases (*Brit. Med. Journ.*, vol. i., 1896, p. 230). He gave it from a closed inhaler (Clover's portable ether inhaler); pouring in 2 drachms, and excluding air as much as possible, he found no coughing, struggling, or fighting for breath. There was very little after-sickness, even although no restriction as to food was imposed. The patients were placed in the sitting posture; one fatal case occurred, and more than one threatened heart failure. This leads Stallard to suggest that the horizontal posture is the safest. The pulse and respiration were quickened, the face flushed and capillaries dilated. Swallowing movements, screaming, clonic twitchings were present, but no duskiess or cyanosis. In one case vomiting, nausea in three or four cases, were the only after-

effects. The anæsthesia lasted about seventy seconds, the induction taking fifty seconds. It should be noted * that the following mortality has occurred :—Gurlt, 3 in 600 ; Snow, 2 in 238 ; Wagner, 1 in 199 ; Stallard, 1 in 150—or a death-rate of 1 in 190. On the other hand, Rüth reports 2,131 and Phillip 1,000 cases without a single fatality. In several cases death seems to have been due to an impure drug. David Cernā finds that in the lower animals a very marked fall of blood-pressure follows the use of pental. Other observers cite albuminuria, hæmaturia, hæmoglobinuria, as occasional after-effects. Holländer, who has had a very wide experience with pental, while speaking in its favour, states that cyanosis, rigidity, and clonic spasm often complicate its use. It is, however, suggested that the cyanosis is due, not to the pental, but to the spasm of the muscles of respiration caused by it.

* “ Pental,” by Dudley Buxton (*Clin. Journ.*, March 25, 1896).

GENERAL SURGERY.

BY WILLIAM ROSE, M.B., B.S., F.R.C.S.,

Professor of Clinical Surgery in King's College, and Senior Surgeon to King's College Hospital; and

ALBERT CARLESS, M.S. LOND.,

Senior Assistant-Surgeon to King's College Hospital, and Teacher of Operative Surgery in King's College.

I. General methods.

The new photography.—No account of the year's work would be complete without an account of the discovery of Prof. Röntgen, which has made 1896 a landmark in medical science; and although it is not exactly a method of treatment, yet it is used so constantly, and is so important an accessory to diagnosis, that no excuse is needed for dealing with it here. Since the discovery was announced in the last week of January, there has been one continuous series of papers and articles relative to it, and the improvements have been so rapid and so radical in nature that one can only give a few hints as to the methods employed, and then add a list of the various conditions in which it has proved useful.

The *modus operandi* consists in passing an electrical current of high tension through a specially constructed tube in which there is a vacuum of very great tenuity. The original Crookes tube was shaped like most of the ordinary incandescent lamps, and had two terminals, usually of platinum, inserted into the poles. The results gained by this means, though striking, were not very satisfactory, owing to the length of time it was necessary to expose the object, and the imperfect definition thereby obtained. The introduction of the *focus tube* by Mr. Herbert Jackson, of King's College, was a distinct advance; in this the negative pole consisted of a concave plate of platinum, whilst the positive pole terminated in a plate of the same material fixed in the focus of the concave terminal, and set at an angle so as to reflect the rays (?) to one side of the tube. More recently, still further changes have been made whereby, although the principle of the focus tube is retained, the power and intensity of the rays

are increased. By this means it is easy to obtain a skiagram of almost any part of the upper extremity by an exposure of under one minute, whilst the trunk can be penetrated, and even the vertebræ photographed, in a little longer time. Dr. Levy, of the General Electrical Company of Berlin, has devised a vacuum tube in which the kathode is doubled, consisting of two concave plates situated one at each end of the tube, whilst the anode is a V-shaped double platinum plate set between them at such angles as to reflect the rays originating from each end in the same direction. With this apparatus truly marvellous results have been obtained, including pictures of a dilated and atheromatous aorta, the descent of the diaphragm, calcified foci of old tuberculous disease in the lungs, enlargement of the heart, etc.

A most important modification of this process was early added, in the shape of the *Cryptoscope*, or fluorescent screen, by means of which the effects of the X rays can be rendered visible to the naked eye, and thus the delay of developing and fixing the photographs can be avoided. Prof. Salvioni, of Perugia, was the first to demonstrate the possibility of this, and since then considerable improvements have been made. Practically, a cryptoscope consists of a cardboard screen covered with a layer of minute crystals, either of platinocyanide of barium (as originally used by Röntgen), or of platinocyanide of potassium (Jackson), or of tungstate of soda (Edison).

The various conditions in which skiagraphy may be of use to the practitioner may be enumerated as follows :—

1. The detection of foreign bodies in the tissues, such as bullets, needles, splinters or fragments of glass or metal, etc. Possibly the cryptoscope will be of greater use in enabling the surgeon to localise exactly the situation of the foreign body, since it is often impossible to say whether it is in front of or behind a bone in a skiagram ; this may, however, be avoided by taking the picture in two or more directions. A large number of cases proving the utility of skiagraphy for this purpose has already been recorded.

2. The detection of foreign bodies in the viscera can also be accomplished. Thus a jackstone has been located in the œsophagus ; buttons, coins, and such like articles can be seen through the laryngeal cartilages ; and the recent advances will possibly enable us to detect foreign bodies in the stomach, a Murphy button in the intestine, or an impacted substance in a bronchus.

3. Various forms of calculi may also be rendered visible. Probably there will be some difficulty in seeing biliary calculi, since they are nearly or entirely transparent to the X rays; but renal calculi have already been photographed, and even stones in the bladder or prostate may in time be detected.

4. Fractures and dislocations necessarily offer one of the most useful and fruitful fields for this process. The exact position of the lesion can thus be determined, and a diagnosis often effected quite early in those injuries of the elbow and other joints which, owing to the amount of swelling and extravasation, have previously remained doubtful. It is also possible to see that reduction has been effectually accomplished or a fracture correctly set. As the rays are capable of penetrating wooden splints or plaster of Paris cases, there is no need even to disturb the retentive apparatus. The process of union of a fracture can be readily watched, and it will be noticed that as the callus is forming, the ends of the bone become less distinct owing to the increased amount of soft granulation tissue present. Separation of epiphyses can be detected, but in young children the results are not quite so satisfactory since the epiphysial cartilage is transparent, and does not appear in the skiagram. The character of ununited fractures can also be made out, and the exact effect of an operation watched.

5. In certain forms of diseases of bone considerable assistance in diagnosis will be obtained from this process. Tuberculous deposits are more transparent than ordinary osseous tissue, and therefore localised foci appear as whitish areas in the skiagrams; it is also possible to determine whether the disease is limited to the periosteum or affects the interior. Again, gouty deposits can readily be recognised, whilst the diagnosis of malignant or other tumours will be considerably facilitated.

6. Nothing special is noticed in diseases of joints, except as they involve the ends of the bones; thus the character of the bony outgrowths in osteo-arthritis can be recognised, and the question as to the limitation of tuberculous disease to the synovial membrane or not can also be settled. In cases of ankylosis the surgeon will be able to decide definitely as to the nature of the condition—*i.e.* whether it is fibrous or osseous, and upon the line of treatment to adopt. It is also to be hoped that it will finally dispose of the "bone-setter," and his boasted reposition of small bones which are said to be "out."

7. In all deformities involving bones skiagraphy will play an important part in determining the character of the lesion. To

mention a few in which it is obviously useful:—congenital absence of the radius; polydactylism or syndactylism; metatarsalgia or Morton's disease; hallux valgus; deformities due to defective growth of an epiphysis, etc.

8. Finally, it seems likely that we shall derive considerable assistance in the diagnosis of certain lesions of the viscera or of the blood-vessels; but the advances rendering this possible have been so recent that it is not easy to predict what the outcome will be.

[Amongst the voluminous literature of this subject we may notice the series of articles in the *Brit. Med. Journ.* by Sydney Rowland, commencing on February 8; and the *Arch. of Clin. Skiagraphy*, published by Rebman & Co., and edited by the same gentleman; a series of papers by W. Turner in the *Lancet* (June 20 *et. seq.*); a capitally illustrated paper by White, Goodspeed and Leonard in the *American Journ. of the Med. Sciences*, August, 1896; &c.]

Treatment of aseptic wounds without bandages or dressings.—**Mackenzie**, of Burnley (*Brit. Med. Journ.*, February 1, 1896), describes a method which he has employed whereby costly and often irksome dressings may be satisfactorily dispensed with. To ensure success the strictest asepsis is needed, and also complete hæmostasis. The wound is well dried, and closed by rows of buried catgut sutures, which bring the various layers of tissues accurately together. A continuous catgut stitch is then used for the skin, and over all, extending at least half an inch beyond the incision in all directions, is applied a solution of celloidin (one part in four times the amount both of absolute alcohol and sulphuric ether); this contracts and keeps the margins of the wound closely apposed. The skin must be thoroughly dried before applying it. In cases where some exudation is expected, a drainage tube is inserted, an unperforated portion protruding beyond the skin for about an inch. This is surrounded by a piece of sponge soaked in some antiseptic, and the sponge enclosed in a bag of guttapercha tissue, which is sealed down to the celloidin coating by chloroform so as to be impervious. There can be little doubt that an arrangement such as this will in many cases prove satisfactory, and, indeed, some surgeons have before this emphasised the fact that cumbrous dressings are often quite unnecessary. Thus Treves has reported his method of dealing with compound fractures by merely heaping up iodoform over the wound; whilst for hernia wounds in children it has been found that dressings are almost useless, and indeed often harmful, since they are certain to be continually soaked with urine,

possibly giving rise to wound infection. The celloidin method of treatment is in such a case likely to give satisfactory results.

Picric acid as a surgical dressing for burns.—It has long been noticed that granulating surfaces after burns, and sometimes others, take a long time in healing owing to a difficulty in the formation of epithelium, and there can be little doubt that this is in many cases due to the character of the local applications employed. **Thierry** (*Gazette des Hôpitaux*, January 18 and February 27, 1896) points out that there are certain agents which tend to soften and remove epithelium by a keratolytic action, whilst other substances have a keratoplastic function in preserving epithelium and transforming the soft cells that are first formed into a harder and more resistant type by hastening keratinisation. The majority of ointments and wet applications are markedly keratolytic in function, salicylic acid being perhaps the most potent; whilst pyrogallic acid, ichthyol and picric acid are the best keratoplastics. It is therefore proposed to use picric acid as a dressing for burns and superficial abrasions where the whole thickness of the epithelium has not been entirely destroyed—*i.e.* in burns of the first and second degrees, and possibly in the later stages of the treatment of burns of the third degree. Thierry is able to report most favourably of its action in burns, and also in other conditions where rapid protection of the surface was required. **D'Arcy Power** in England (*Brit. Med. Journ.*, September 12, 1896) gives good accounts of its use, and we also have been well satisfied with it. The best method of application is as follows:—The surface is first washed with some efficient antiseptic, such as carbolic acid; any blisters are opened and the contained serum let out, and then the cuticle either removed, or allowed to fall back and form a superficial covering to the abraded and raw surface. Possibly it is wiser to remove it, so as to allow the picric dressing to come into direct contact with the surface. A piece of lint about the size of the wound is then dipped in a saturated solution of the acid, made with sterilised water, and this is placed over the lesion and covered with a thick layer of sterilised absorbent wool, the whole being secured by a bandage. A certain amount of stinging pain may result for a short time, but this soon passes off. The dressing is left alone for three or four days, thus being converted into a dry application; it is then replaced if necessary, and usually the burnt surface will be found comfortably cicatrised and healed in a much shorter time than with any other application. Picric acid is apparently non-toxic, although individual peculiarities may exist rendering certain people susceptible to its action. Further

experience will probably demonstrate that we have in this drug a valuable means of promoting the healing of extensive breaches of surface, where the epithelium has not been entirely destroyed. Surgeons may also note the fact that a tiny picric acid dressing secured in position by collodion is one of the most effectual means of securing the rapid healing of "hangnails," which so often prove dangerous to surgeon and patient alike.

The injection of saline fluids so as to increase the volume of blood circulating in the system is a plan of treatment which has for some time been utilised, although it is only recently that it has obtained any general recognition, or been extensively employed. Some authorities make use of the veins for this purpose, but others are satisfied with injecting the fluid into the subcutaneous areolar tissues, and others, again, prefer the rectum. In the laboratory intra-peritoneal injections have also been experimented with, but obviously such are only practicable in the human subject under special circumstances. A considerable amount of attention has been drawn to this plan of treatment in the past year, and various conditions have now been treated by its means.

1. In *hæmorrhage*, whether due to operation, accident, or other causes, we possess in this method a means of restoration so potent that the late Dr. Wooldridge laid it down as an axiom that "no patient ought to die of hæmorrhage." Formerly transfusion of blood was alone practised, and the results were anything but satisfactory, so that it fell almost entirely into disuse. As soon as it was recognised, however, that the use of blood was unnecessary, and that it was quantity and not quality that the patient required, the use of a weak saline solution was advocated, and the subsequent results have been so satisfactory that no surgeon should ever undertake a serious operation without being provided with an infusion apparatus. All that is needed is a sterilised solution of chloride of sodium, one drachm of the salt to a pint of water, and at a temperature of about 105°. If the case is urgent, the intravenous method should be employed, three or four pints being perhaps introduced; in the less serious cases, subcutaneous or rectal injections will suffice.

2. In *severe shock* the same proceeding has also proved beneficial; here, however, the effects are more temporary, and the injection may need to be repeated more than once.

3. But it is in cases of *septicæmia* and *severe toxæmia* that the greatest advance has recently been made. It is well known that the usual cause of death in acute peritonitis is not the mere inflammation of the serous membrane, but the absorption of large

quantities of toxic products, and it is this which brings about the extreme collapse so characteristic of the later stages of that disease. Anything, therefore, which tends to increase the blood pressure, and so restore the circulation and prevent intracardiac thrombosis, especially if at the same time it determines the elimination of the toxins and microbes that are circulating in the blood, will assist nature in throwing off the disease. The injection of a saline solution fulfils both these requirements. The blood pressure is at once raised; the pulse becomes stronger and slower; the temperature perhaps rises some degrees, if it is subnormal; and very rapid and marked diuretic and purgative effects follow. At the same time the toxins which remain in the blood are so diluted as to be rendered to a large extent innocuous. It is in post-operative and puerperal peritonitis that this plan has been most often employed, and the records of cases that have been thus treated are certainly full of the greatest encouragement. Thus **Pozzi** (*Presse Médicale*, July 4, 1896) relates cases in point and gives a good bibliography of the subject; **Lejars** (*ibid.*, January 1, 1896) describes three instances of its use, of which two were successful; one was a case of rupture of the intestine with virulent peritonitis, the patient after operation receiving 26 litres of the so-called artificial serum in the course of the next nine days; the second was for a ruptured tubal pregnancy; and the third, which died, was for peritonitis following a perforating typhoid ulcer. The fluid used in these patients was made according to Hayem's formula, consisting of chloride of sodium 5 grammes, sulphate of soda 10 grammes, and water to the litre. Many other cases have been recorded, especially in the French papers, but sufficient has been said to indicate that we have here a potent agent in combating a condition with which we are unable otherwise to deal satisfactorily, and every patient in such a state should be given the benefit of being treated in this way.

4. Lastly, in sundry medical affections it has also been employed—viz. in *diphtheria*, where the antitoxin treatment does no good, in *uræmia*, and in *diabetic coma*, in order to assist in the elimination of toxic products from the blood. (See also *Brit. Med. Journ. Epitome*, July 4, 1896, ii., No. 13.)

The use of *antistreptococcic serum* in infective conditions due to the presence of some of the various modifications of the streptococcus pyogenes continues, and with results that are on the whole extremely gratifying. There can be but little doubt that the various forms of erysipelas, cellulitis and diffuse suppuration are due to the development of the same organism, the varying manifestations resulting simply from the differing degrees

of virulence and the diverse methods of inoculation. Moreover, many cases of acute arthritis, and some forms of peritonitis, empyema, and glandular inflammation are dependent on the same cause. Hence, the one form of serum, produced by immunising a horse to the action of the laboratory streptococcus, suffices in the treatment of all these different affections. **Marmorek**, working at the Pasteur Institute at Paris, has been enabled to demonstrate the unity of all streptococcal affections, and has prepared a serum that is practically of a constant strength and character. (See *Annales de l'Institut Pasteur*, 1895, p. 593; 1896, p. 47; also a summary of the subject by **Jackson**, *Boston Med. and Surg. Journ.*, August 27, 1896.) As to the results that have been obtained in the treatment of erysipelas, the most complete statistics are those which were presented to the Municipal Council of Paris by **Chantemesse**, who has charge of a special hospital devoted to the treatment of this disease. (See *Dubreuilh*, *Journ. de Méd. de Bordeaux*, January 26, 1896.) During the twelve months preceding December 25, 1895, 1,054 patients were under treatment. Of these, 554 were not treated with serum, and the mortality amounted to 3·79 per cent. Between March and May, 297 patients were treated with a serum of medium strength, with a death-rate of 1·70 per cent. A weaker serum was then employed owing to a failure in the supply of the better; 107 cases were thus dealt with, and the mortality rose to 6·54 per cent. From November onwards a very effective serum was again obtainable, and of the 96 cases treated therewith only one died, giving a death rate of 1·03 per cent. It is thus evident that the practical value of the serum depends greatly upon its strength. As a rule no local ill results were noticed, although a transient erythema occasionally occurred. The eruption quickly ceased to spread, and in twenty-four hours began to fade; desquamation followed, large flakes of cuticle separating in many cases; the pain ceased, and the general condition evidently improved. No abscesses developed after the injections had commenced, but if any were previously present their course was not appreciably affected. The dose employed was usually 10 c.c., or in very severe cases perhaps 20 c.c., repeated two or three times a day.

In general streptococcal infections the serum has also been utilised with advantage, both for septicæmia and pyæmia, if not advanced too far. Thus, **Dubreuilh** (*loc. cit.*) mentions five cases of puerperal septicæmia cured in this way, and a most marked instance occurred in St. Thomas's Hospital, where a medical man infected himself at an autopsy and developed symptoms of acute hæmorrhagic septicæmia. 3·5 c.c. of Burroughs and

Wellcome's antistreptococcic serum were injected every four hours, and the result was that in six hours after the first injection certain indications of improvement manifested themselves. The dose was doubled on the second day, and given every four hours for some time; subsequently the dose was gradually diminished by reducing the frequency of its administration. In about ten or eleven days the temperature fell to normal, and a perfect recovery ensued. (See Ballance and Abbott, *Brit. Med. Journ.*, July 4, 1896.)

It is unnecessary to overload these pages with cases and statistics; the above facts are quite sufficient to demonstrate that in suitable cases the practitioner has here to hand a remedy, which, wisely used, may be the means of curing patients who otherwise would certainly succumb, and it is the duty of every medical man to accustom himself to the use of these agents, and to qualify himself by careful reading and study so to use them that no discredit shall be cast upon them from their injudicious employment.

Serum-therapy in malignant disease.—Great efforts are still being made to discover a cure for malignant disease, and although this desideratum has not yet been attained, results have already been achieved which indicate that we are on the right track, and sooner or later it may be expected that more tangible and satisfactory conclusions may be reached. The foundation on which this hope rests, and upon which all the subsequent work has been built up, is the observation, made sufficiently often to establish its correctness beyond doubt, that malignant tumours, as also other infective conditions, such as chronic lupus, can be entirely cured by an attack of erysipelas. Soon after Fehleisen had isolated the streptococcus erysipelatosus, the artificial inoculation of patients suffering from inoperable malignant disease with a living culture of the organism was commenced. He himself reported seven cases treated in this way; in one the tumour entirely disappeared, and nearly all showed some improvement. Coley dealt with ten cases; two of them were hopeless recurrent sarcomata, and yet the patients are still alive and well, one three years and the other four years after the treatment. The occurrence of two deaths, however, out of the ten cases suggested that there was a considerable element of danger in inoculating with the living organism, and therefore the next step consisted in using the toxins alone after sterilising the cultures. Much the same results followed, though with some loss of reaction. It seemed desirable to increase the virulence of the fluid, and this was effected after a while by growing with it the

bacillus prodigiosus, and it is with this fluid that most of the recent work has been done. (For the mode of preparation of the fluid, see **Coley**, *American Journ. Med. Sci.*, September, 1896, and *Johns Hopkins Hosp. Bulletin*, August, 1896.) In these papers the results of treatment are reported in 160 cases, including 94 of sarcoma, and 63 of cancer. Of the sarcomata, 45 showed signs of improvement. The spindle-celled tumours were influenced the most, whilst the melanotic and osteosarcomata were scarcely affected at all. In the carcinomata the results were much less encouraging, and yet in several cases a beneficial influence seems to have been exerted; sufficient time, however, has not yet elapsed to make certain whether the apparent disappearance of the growths is permanent or only temporary. Coley is able to report fully fifteen, and, perhaps, sixteen cases in which he claims to have effected a cure; fourteen of them were sarcomata, and the remaining two epitheliomata. In all these, except the one doubtful case, a microscopic examination of the mass had been made. He has also been able to collect thirteen cases of sarcoma cured by this means by other surgeons, although some of them are of too recent date to be of much value; and also two cases of cancer. The conclusions he arrives at are as follows:—“(1) The mixed toxins of erysipelas and *b. prodigiosus* exercise an antagonistic and specific influence upon malignant tumours, which influence, in a certain proportion of cases, may be curative. (2) The influence is slight in most cases of carcinoma (including epithelioma); most marked in sarcoma, but varies with the different types. (3) The action of the toxins is not only local in character, but systemic. (4) The toxins should be used only in clearly inoperable cases, or after primary operation to prevent recurrence. (5) The results will vary greatly with the strength of the preparation, the most virulent cultures giving the best results.”

Coley's conclusions must, however, be read with a certain amount of reserve, since they have not been confirmed by other authorities. Thus, **Senn**, after a careful investigation and trial of the method, concludes that it is of little value (*Journ. of the Amer. Med. Assoc.*, July 27, 1895); whilst a committee of the New York Surgical Society, consisting of **Stimson**, **Gerster**, and **Curtis**, submit: (1) That the danger to the patient from this treatment is great. (2) Moreover, that the alleged successes are so few and doubtful in character that the most that can fairly be claimed for the treatment by toxins is that it may offer a very slight chance of amelioration. (3) That valuable time has often been lost in operable cases by postponing operation for the sake

of giving the method of treatment a trial. (4) Finally, and most important, that if the method is to be resorted to at all, it should be confined to the absolutely inoperable cases. (*Annals of Surg.*, July, 1896, p. 53).

Another plan which has been suggested by **Emmerich** and **Scholl** consists in the injection of the serum of an animal that has been rendered immune to erysipelas—*i.e.* the erysipelas antitoxin is employed. **Emmerich** (*Deut. med. Woch.*, 1895, No. 43) claims one or two cures, and several cases ameliorated. **Kopfstein** (*Wien. klin. Rundschau*, 1895, Nos. 33 and 34), on the other hand, concludes that it is of no value.

Finally, **Héricourt** and **Richet** have used another form of serum, obtained from an ass that had previously been injected with gradually increasing doses of the fluid expressed from a malignant tumour or by soaking it in glycerine. They reported fifty cases treated in this way up to October, 1895. In almost all the pain diminished, and ulcerating surfaces tended to heal, but no cure could be claimed. Since then **Jona** (*Gazz. degli Osped.*, May 23, 1896), reports six cases of cancer dealt with in this way. Two derived no benefit, three were definitely ameliorated, whilst in one the improvement was so great that it might be called a cure. There was a good deal of doubt, however, whether this case was of a malignant nature at all. **Arloing** and **Courmont** (*Bull. de l'Acad. de Méd.*, May 12, 1896), have also been investigating this subject, and find that whilst a cure cannot be anticipated, yet that injection of ass's serum does produce a temporary effect, probably by reducing the amount of inflammatory infiltration around the mass, and thus may be beneficial by rendering a tumour operable that had previously been inoperable. They also find, however, that normal ass's serum has exactly the same properties, though possibly not quite to such a degree. (See also **Le Dentu**, *Gaz. des Hôpit.*, February 8, 1896.)

The *treatment of tetanus* by an antitoxic serum still continues, and cases are published from time to time in which recovery or the reverse occurred, so that although the records are anything but complete, and whilst one is certain that the majority of fatal cases are left unreported, yet it is now possible to get some idea as to the value of the process. The best account of the subject is given by **Jackson**, of Boston (*Boston Med. and Surg. Journ.*, August 27, 1896), who has been able to collect forty-four cases treated in this way, of which twenty-seven recovered, together with seven cases of tetanus neonatorum, all of which were fatal but one, and that was an extremely slight attack. The results are certainly disappointing, and the brilliant anticipations formerly indulged in have not

been fulfilled. Nor can this be altogether wondered at since the incubation period is often long, and by the time symptoms develop, patients have received a dose of the tetanotoxin which nothing can counteract. It is well known that this poison is of a most virulent nature, and Brieger has estimated that it is at least 400 times as potent as strychnine. Then, too, it must be remembered that the serum which is employed is in reality an immunising and not a curative agent, and hence its action is directed rather to preventing the spread of the infective organisms and inhibiting their growth than to curing or neutralising the effects of the toxin that has already been absorbed. Its value in any particular case therefore depends on two main facts—viz. the incubation period of the disease, and the acuteness of the initial symptoms. When the period of incubation is prolonged, this indicates either that the virulence of the causative organisms is not great, or that the condition of the soil in which they are implanted is not suitable to their development; and in such cases it is well known that, quite apart from the use of antitoxin, the prognosis is not altogether unfavourable. Thus Richter calculates that if the incubation period is under ten days, not more than 5 per cent. recover, whilst if it lasts for ten to fifteen days, 27 per cent. of cures may be expected; and if the onset of symptoms is delayed for fifteen to twenty days after the injury, 45 per cent. of the patients may live. Again, the method of onset in any particular patient is an important indication, since it is governed by the dose of toxin actually present in the system; thus, although the incubation period may be long, the case may be severe and end fatally.

In conclusion, it would appear that all cases of tetanus should have the advantage of being treated by the antitoxin. Probably no bad results will ensue, although in one or two instances the temperature rose after its introduction, and the symptoms seem to have been somewhat aggravated (see Trevelyan, *Brit. Med. Journ.*, February 8, 1896). In many cases, moreover, it is possible that an insufficient amount of the serum was employed, since it has been proved that, for immunisation purposes at any rate, a certain proportion must exist between the dose of the toxic products and the amount of antitoxin. Beck (*Zeits. für Hygiene und Infectious-krankheiten*, Bd. xix.) claims that, from experiments on animals, doses mounting up to one-hundredth of the body-weight are often needed to prevent the development of symptoms, but even this only acts if the toxic phenomena are not already present. It is evident, then, that much more information is required before the treatment of this disease in man can reach such a stage as to enable the practitioner to treat it with any certainty, and probably

it will be found that some considerable modification in the nature of the serum is indispensable.

The treatment of actinomycosis has been largely influenced of late by the observation that it reacts almost as rapidly to the administration of iodide of potassium as does tertiary syphilis. The clinical features of the disease have now been carefully studied, and the fact established beyond controversy that it is a much more common affection than was formerly supposed. An excellent account of its characters, together with its symptoms and pathology, is given by **Malcolm Morris** in the *Lancet* (June 6, 1896), and most of the published work on the disease is there referred to. "The most striking feature of the eruption is constituted by enormous, livid, fleshy, sarcomatous-looking outgrowths of mottled purplish and yellow colour. . . . All of the growths feel fluctuating and pulpy, and are not tender; each growth presents one at least, usually several, small crateriform ulcerative openings, from which a clear, rather sticky fluid constantly exudes (Pringle)." In this exudation are found the typical granular nodules, which are formed of masses of actinomyces. As the fungus is discharged, the sinus contracts and cicatrises, and thus an irregular puckered condition of the tumour is produced. It is seen most frequently in the cervico-facial region, and one of the most marked symptoms is the early supervention of trismus, which is dependent neither on the pain nor on the swelling. In the less severe cases all that is required in the way of treatment is the administration of gradually-increasing doses of iodide of potassium, which must be continued for varying periods from weeks to months. In the more serious instances this must be supplemented by surgical measures, such as curetting, purification, and stuffing of the sinuses. A large number of cases dealt with in this way have been recorded during the past twelve months, but it is scarcely necessary to refer to them in detail.

2. Surgery of the osseous system.

The ambulatory treatment of fractures is still receiving a certain amount of attention, although it is becoming so well recognised, at any rate on the Continent, as a routine plan of procedure that comparatively little has lately been written about it. An excellent editorial article by **Pilcher**, of Brooklyn, is to be found in the *Annals of Surg.* (July, 1896), *apropos* of a case which he had shown at the American Surgical Association in the preceding month. The patient had suffered from a compound Dupuytren's fracture three weeks before, and he had already been walking about with a plaster support for one week. The desirability of early immobilising the limb has long

been recognised, but the essential feature of this new process is that the injured limb is used as an active means of locomotion while repair is taking place. "The possibility of this depends upon the ability so to adjust the dressing that the portion of the limb distal to the fracture shall be suspended in the rigid dressing which below projects beyond the sole of the foot, to come in contact with the ground, and above bears upon the prominences about the knee and the conical surfaces of the thigh, or upon the tuberosity of the ischium, as the case may be, so that the weight of the body is transmitted from these prominences through the dressing to the ground, whilst the point of fracture is protected from injury. It is obvious that in the swinging, dependent position of the limb, and the restricted muscular movements which are unavoidable in the efforts at using the limb in locomotion, a condition more favourable to the repair of the fracture is created than attends the anæmia caused by the position, the bandaging, and the disuse, which are a part of the usually-followed methods of treatment." It is unnecessary to enter here into the exact methods of applying the plaster. Suffice it to state that a layer of cotton wool nearly an inch thick should be inserted under the sole, and that lateral metal bands, reaching for fractures of the lower leg from the femoral condyles down each side of the limb, so as to pass under the sole, are incorporated into the dressing. The casing should closely embrace the upper portions of the limb, being applied over a thick stocking, so that there shall be no risk of its slipping up. Pilcher reports twenty cases of fracture treated in this way with the most satisfactory results, the majority of them being able to leave the hospital in one or two days where the fracture was simple. In compound fractures, including both tibia and fibula, the plaster dressing was applied on the first, ninth, fourteenth, and forty-sixth days respectively, and in all the patient was encouraged to walk about with a stick or with crutches at once.

There are two chief dangers to be guarded against in this method of treatment—viz. secondary shortening and pressure sores. The former is likely to occur after the removal of the apparatus, from the confidence with which the patient walks about. Under the old *régime*, the patient was always somewhat chary of trusting his weight to the limb when first freed from the apparatus, and hence such an occurrence was seldom observed; but in these cases, where he has been using the limb freely from the earliest days, no such fear is experienced, and the soft callus may yield in consequence. It suffices to call attention

to such a possibility in order to ensure the care necessary to prevent it. Pressure sores are almost always due to the dressing not being accurately adapted to the limb, or to wrinkling or creasing of the bandages. Considerable technical skill and experience are called for in applying these dressings, and it is possible that they will not at present be largely used outside of hospitals, although the experience hitherto gained is sufficient to prove that by this means the period of after-treatment is considerably diminished.

The treatment of fractures by *massage and early mobilisation* is almost the exact antithesis of the former method. It is only suited to certain fractures, especially those in the neighbourhood of joints, and in situations where there is but little deformity and no great weight to be supported. Perhaps the following lesions are those for which it is best adapted:—Intracapsular fracture of the neck of the humerus, various lesions in the neighbourhood of the elbow, Colles's fracture, and fracture dislocations near the ankle, including Pott's fracture. **Noble Smith** (*Brit. Med. Journ.*, February 15, 1896) reported to the Medical Society his own experiences with a Pott's fracture sustained in the hunting-field. The fracture was replaced immediately, and within half an hour strapping had been applied so as to control the effusion. The limb was placed on a back splint with foot-piece, and in a week's time plaster-of-Paris was used. Every day, however, almost from the first, the ankle was gently moved, and a gradually-increasing amount of massage employed. By the end of the third week the weight of the body could be borne on the foot for a moment; on the twenty-third day he could walk with caution, and on the thirty-fourth day he gave up crutches and only used sticks. **Lucas-Championnière** (*Journ. de Méd. et de Chir.*, August 25, 1896) has treated twenty cases of fractured clavicle by this method, and clear instructions are given in this paper as to the correct method of proceeding, dealing first with the bone, then with the neighbouring muscles, and finally with the surrounding joints. The cure was established in eighteen to twenty-five days, by which time the patient was able, with care, to resume his ordinary occupations, there being no stiffness of the parts to be overcome, as would inevitably have been the case had the usual method of immobilisation for four or more weeks been followed. "Massage is begun at once—the sooner the better—and employed daily until the bones have united. The *séances* last, as a rule, fifteen to thirty minutes. At first the manipulations are gentle, and pressure should not be directed

over the ends of the fragments. In the intervals the limb is merely supported by a flannel bandage—evenly, but not tightly, applied—or by sandbags alone; or, in other cases, by strapping. Splints or other immobilising apparatus are not employed.” (Editorial, *Medical News*, July 11, 1896.)

The treatment of acute infective osteomyelitis has been immensely influenced of recent years by the advance in pathological and bacteriological work, and although the majority of surgeons are well aware of the right lines upon which it should be conducted, yet it seems worth while again to call attention to it *apropos* of one or two papers that have recently appeared. The two chief pathological facts upon which our modern treatment rests are, first, that the disease is primarily one involving the medulla, the periosteal affection being quite a secondary matter; and, secondly, that it is due to an infection of this medullary tissue with pyogenic organisms that reach it from within the body. Moreover, it has been shown that it usually starts in the neighbourhood of the epiphysial cartilage, and on the shaft side. The correct treatment consists then not in waiting until pus has formed, but as soon as the presence of the inflammation has been satisfactorily determined an incision should be made down to the focus of the mischief, the medulla exposed by cutting away, if need be, the overlying compact tissue, and then in scraping out all the diseased material and thoroughly purifying the cavity. **Edmund Owen** (*Internat. Clinics*, vols. ii. and iii., Fifth Series) has laid special stress on this point, ably urging the immense importance of interfering, if possible, before pus has formed. Any delay is most disastrous, since the staphylococci are developing at a terrible rate and diffusing themselves along the medullary cavity, causing, perhaps, thrombosis along the whole shaft. If a subperiosteal abscess is present, it must be fully opened up and flushed out with some suitable antiseptic, and then, according to circumstances, the shaft may be left *in situ*, or one end of it removed, or, if quite loose, the whole of the diaphysis may be at once resected. Where there is no loss of continuity between the shaft and the epiphysis, although the former has been stripped of its periosteum, the medullary canal should be laid bare and the inflamed medulla scraped away; the same proceeding must also be undertaken where the periosteum, though thickened and œdematous, is still adherent, if the medulla is evidently involved. **Morton** (*Annals of Surg.*, August, 1896, p. 235) related a series of cases which he had treated most successfully in this way. In one the lower end of the right tibia

was affected ; an incision two inches long was made through the thickened periosteum, a gutter of the same length was cut into the medulla, and through this the soft medullary tissue was scraped away. The cavity was plugged, and the next day there was abundance of pus on the deep dressings. In three weeks the wound was soundly cicatrised. Other surgeons at the same meeting related similar cases, all emphasising the necessity of an early diagnosis, and agreeing with the principles of treatment outlined above.

Attention has also been drawn during the year to *acute primary osteomyelitis of the vertebræ* in an excellent paper by **Makins and Abbott** (*Annals of Surg.*, May, 1896), based on a study of twenty-one reported cases. The importance of early recognition of this affection is evident when it is stated that the mortality amounts to not less than 71·4 per cent., mainly arising from extension of the inflammatory process to the cord and its membranes. It may commence either in the body or in the neural arch, and soon runs on to abscess formation, but deformity is not a marked feature. The treatment required consists in early incision so as to remove all tension, whilst if the neural arch is affected, it should be cut away so as to make certain that there is no collection of pus within the canal.

Post-typhoid bone lesions.—It has long been known that bone disease is a not uncommon complication or sequela of typhoid fever, but it is only comparatively recently that much attention has been directed to it. This increased notice is due to a large extent to the recognition of the pyogenic powers of the bacillus typhosus ; formerly it was supposed that suppurative phenomena following this affection were due to the ordinary pyogenic organisms, but now that it has been conclusively proved that many of them result from the typhoid organism with or without the assistance of other bacteria, a much more careful study of the varying phenomena has been made. Two other facts of importance in connection with their pathogenesis must be noted : first, that bone marrow resembles the splenic pulp in forming a suitable nidus for the bacilli to lie latent in ; and secondly, that the bacilli often lie passive in this situation even for years without producing any ill effects. Thus **Bruni** (*Annales de l'Institut Pasteur*, April 24, 1896) relates a case in which an abscess of the tibia was opened six years after an attack of typhoid fever, and the pus therein contained a pure culture of the bacillus ; the limb had been painful from the time of the febrile attack. The bones are most commonly attacked in growing people, and many of the so-called growing pains of children

following this disease are probably due to a slight infection of the bones that passes away; the great increase in the length of the bones during this fever is also probably due to the same cause. The male sex is more often affected than the female in the proportion of 9 to 1. The pathological conditions induced by the typhoid organisms are very varied, consisting either of a localised periostitis or osteomyelitis with or without suppuration or necrosis, a subacute periostitis, leading to chronic suppuration and caries, or a chronic inflammation, causing the formation of a node which may resolve or may leave a persistent overgrowth of the bone resembling an exostosis. These phenomena most often commence during convalescence, and may undergo marked remissions before leading to suppuration.

As to treatment, in the early stages all that is as a rule needed is to keep the part at rest and apply soothing medicaments, such as belladonna fomentations. As soon as there is any sign of suppuration, an incision should be made, and the subsequent steps must be varied according to the conditions thus exposed. If the bone is apparently unaffected, all that is needed at the time is to scrape the under surface of the periosteum and allow the wound to heal; but where there is evidently deeper mischief, the superficial layer of compact tissue should be removed by the trephine or mallet and chisel, so as to expose the underlying medulla; the diseased tissue is then scraped away, the cavity purified by pure carbolic acid, and the wound stuffed with antiseptic gauze. If necrosed bone is present, it must be removed, and the surrounding tissues similarly treated. The important thing to note is that a simple incision is rarely sufficient to effect a cure; the diseased bone marrow must be entirely removed, and the cavity efficiently disinfected. (See **Parsons**, *Annals of Surg.*, November, 1895; **Paul-Boncour**, *Gaz. des Hôpit.*, March 28, 1896; **Tuffier** and **Widal**, *Presse Médic.*, March 28, 1896; **Bruni**, *Annales de l'Institut Pasteur*, April 24, 1896, etc.)

Restoration of the os calcis after caries by the use of decalcified bone. **Waterhouse** (*Brit. Med. Journ.*, February 15, 1896) showed a little girl to the Medical Society of London, from whom he had removed the whole of the interior of the os calcis for tuberculous disease, leaving merely the outer shell behind. The cavity was well douched, and then packed with minute fragments of decalcified bone, mixed into a paste with iodoform. The wound was sutured, and entirely closed, and was left untouched for three weeks, by which time it was nearly healed. In six weeks the healing was complete, and has since persisted. This is but one of seven cases treated in the same way. The bone chips

were obtained from the scapula of a lamb, the meat on which had been eaten for dinner. It was decalcified in a 15 per cent. solution of hydrochloric acid, cut into fragments, placed in ether to remove the fat, and finally kept for use in a 1 in 10 solution of carbolic acid in glycerine.

Splint for use after removal of the central portion of the lower jaw.—Stokes, of Dublin (*Practitioner*, July, 1896, p. 33), after commenting on the serious inconvenience experienced by the patient after removal of the central portion of the mandible owing to the falling together of the fragments, describes a simple wire splint, which he has devised and used with the greatest success. It consists of a double crutch, each placed at the extremity of a connecting arched bar corresponding in length to the portion of bone removed. It is made of tinned iron wire, about No. 15 Birmingham gauge. The anterior extremity of each fragment is fixed into the crutch at each end of the connecting bar, which should be placed above and not below, so as to facilitate its subsequent removal. The splint is fitted for the particular case by a dentist, who has taken a mould of the jaw prior to operation, at the conclusion of which it is slipped into place. There is no need to remove it for three or four days, or, indeed, until one is ready to replace it by a vulcanite plate carrying the artificial teeth. The practical utility of this suggestion must be obvious to all.

3. Surgery of the nervous system.

The surgical treatment of Jacksonian or focal epilepsy.—When it was first announced that certain cases of epilepsy were apparently due to irritation of a localised portion of the cortex, it seemed natural to expect that removal of the particular cortical area would lead to an immediate cure of the disease, and in consequence a large amount of operative activity was instigated, the results being heralded by the medical press with the utmost satisfaction and considerable self-congratulation. Sufficient time has now, however, passed to test the results thus obtained, and we are beginning to recognise that the sanguine expectations then held forth have not been realised. The improvement, such as it was, has been found to be only temporary, for as years passed the tendency to fits has returned with the same intensity as before, or in some cases in an aggravated form. The explanation of this fact is not far to seek: the removal of the cortical discharging centre put the affected parts at rest, and thus for a time prevented the recurrence of fits; but as convalescence ensued, the lesion in the cortex becomes cicatrised, and a scar remains in that region as the result of the operation which proves quite as formidable in its results as the

original cicatrix for which operation had been undertaken. The practical conclusion, therefore, to which we are forced is that in cases of well localised focal epilepsy, an exploratory trephining is perfectly justifiable, since the symptoms may be due to a depressed spicule of bone, the removal of which may suffice to bring about a real and lasting cure; but that if merely an adherent cicatrix is found, it is unwise to remove it unless there are special features in the case calling for interference at all hazards. A reference to some of the recent literature of the subject fully bears out these remarks. Thus **Mason**, of New York (*Med. News*, March 21, 1896), concludes that the operation has been very much overdone, or rather done very ill-advisedly, and the cases have been selected with very bad judgment. He collects seventy of these, and finds that only three were really cured, *i.e.* that there were in these no fits for three years after the operation, and that improvement of more than one year's duration only occurred six times. He also thinks that an operation will produce a temporary cessation of fits in almost any case. **Manley** (*Journ. of the Amer. Med. Soc.*, December 14, 1895) holds very much the same opinions, and considers that some of the cures obtained are due to the psychic influence of the operation rather than to the operation itself, basing this idea on the well-known fact that a severe fright may not only produce epilepsy, but also occasionally suffices to cure it. He emphasises the fact that a moderate depression of the skull is often compatible with perfect functional activity of the brain. "In more than 700 cases of fractured skulls, beside other serious traumatism of the brain, which have come directly under my care during the past fifteen years, I have found no direct evidence that a moderate indentation of its plates or intracranial pressure from effusion ever *per se* was the cause of epilepsy in anyone who before the injury did not give a history of having had it at some earlier stage of life." **Nancrede** (*Annals of Surg.*, August, 1896, p. 122) concludes as follows:—(1) Removal of the discharging lesion can only be regarded as palliative, the operation scar in time becoming a new source of irritation. (2) The earlier the operation is done after the disease becomes fully established, the longer will the immunity last, and it is possible that, if undertaken early enough, it may in a few cases become actually curative. (3) That operation is not so dangerous in competent hands as to forbid our urging it in these cases, especially as, if done early, the chance of prolonged immunity is great, and the fits are apt to be lighter and to recur less frequently after relapse than before trephining. (4) Removal of the discharging centre is imperatively called for as a

life-saving measure in those rare cases where the fits are so frequent as to threaten life. (5) The early resumption of work after operation, especially of manual labour, is a great error, since it leads to congestion of the brain. (6) Operation removes only one factor in the production of epilepsy, and all other conditions which may lead to cerebral congestion must also, if possible, be eliminated.

Thiersch's operation of neurexaresis.—By this term is meant the extraction of a sensory nerve for neuralgia by torsion; it was specially introduced by Thiersch for the treatment of trigeminal tic, and by its means a considerable portion of the nerve trunks can be readily removed. The operation is based on the idea that the essential point in such treatment is to place the centres in a condition of rest by removing as large a number of afferent stimuli as possible. Apparently it has not been much employed in this country, but in Germany its value has been tested more thoroughly. Angerer, of Munich, at the German Surgical Congress (*Centr. für Chir.*, Appendix to No. 31, 1896, p. 60) gave his experiences in twenty-six patients from whom he had extracted fifty-two nerves, the supraorbital fourteen times, the infraorbital sixteen times, the inferior dental seven times, etc. Of the twenty-six, seventeen are at present free from pain, sixteen were treated more than four years ago, and of these seven have remained quite well, one died of an intercurrent malady, and the others relapsed more or less severely. Angerer recommends (1) that the extraction should be made as slowly as possible, as thereby longer portions can be removed, including the finest twigs; and (2) that branches apparently free from pain should also be dealt with owing to the fact that the pain is rarely limited to one particular trunk. He considers that removal of all three branches of the trunk would render operation on the base of the skull unnecessary. Helferich agreed in the main with these conclusions, but Krause was not able to report anything so satisfactory as to his results of nerve-extraction. He also pointed out that if this proceeding is undertaken early in the case, nothing but removal of the Gasserian ganglion remains, should a relapse occur. Operations on the peripheral trunks are able to give relief for some time, and it seemed to him advisable to work up gradually to the more complete operations and not to undertake them at once.

Our own personal experiences are much in favour of this plan of nerve-extraction in dealing with these cases. We have now operated on quite a number of patients suffering from epileptiform tic both of the second and third divisions of the

nerve, and have been most favourably impressed by the value of the Braun-Lossen procedure for the former, and of the plan of deepening the sigmoid notch in the latter. By the former the second division is dealt with immediately outside the foramen rotundum, and a moderate length can be extracted, but in the latter operation we have on several occasions removed three or four inches of both lingual and dental nerves. The recurrences have been much less marked since we adopted this proceeding.

Krause at the same discussion incidentally mentioned the results of his operations on the Gasserian ganglion; he has dealt with twelve cases, with only one death. Ten are completely healed, and remain free from pain. In last year's Congress he discussed at length the operation he employs (*Annals of Surg.*, July, 1896, p. 92), and the same subject has been dealt with by **Keen** in the *American Journ. of the Med. Sciences*, March, 1896, p. 59. The latter reports five additional cases in which he has operated, and concludes that the Krause operation is better than Rose's; first, because of its smaller mortality [which, however, we do not admit—W.R.], due largely to the more complete asepsis which can be obtained; secondly, because the access to the ganglion is by a large instead of a small and cramped opening; and, thirdly, because the whole ganglion with its roots can be removed. Details are then given as to his exact method of operating, and some very useful practical points indicated. Krause has introduced a handy modification of the circular saw, which can be held at each end like a barber's machine brush, and thus more efficiently steadied. Hæmorrhage from the middle meningeal artery is almost always troublesome, and calls for careful attention, but the preliminary ligature of the external carotid recommended by Fowler is considered unnecessary. Separating the dura mater from the bone is generally attended by profuse hæmorrhage owing to the division of vessels passing from the membrane to the bone; it may sometimes be necessary to pack the wound with gauze, and complete the operation at a later date, although this is obviously undesirable if it can be avoided. The roots of the ganglion are then sought for, and isolated from the dura mater, and by tracing them backwards the ganglion itself is reached. After separating it clearly from the dural sheath in which it lies, the ganglion should be firmly grasped by pressure forceps; then, and not before, the second and third divisions are divided at their foramina; and, lastly, by firm but gentle rotation of the forceps, the ganglion and its divisions can be avulsed, usually bringing with it the sensory root, and in one case also the motor. An illustration is given

of the portion removed in one of Keen's cases, and represents very clearly how thoroughly the ganglion had been extirpated. As to the effect of the operation on the nutrition of the cornea, Keen thinks that, in spite of recent declarations to the contrary, there is definite danger to that structure owing to traumatism from exposure when anæsthetic, and recommends that it should be very thoroughly guarded for some time subsequently. A list and description of his cases are appended, from which it appears that of the six on which he has operated five recovered, and one died from septic infection.

Comparatively little has been added to the statistics or facts regarding the two chief plans of reaching the ganglion, viz., by the Rose operation, or by that devised by Krause and Hartley. A third method of operating has, however, been added, and a good deal discussed in the French journals, which hitherto had taken but little notice of the proceeding. It was originally devised by **Doyen**, and described at the French Congress of Surgery in April, 1895. Since then several communications have appeared referring to it (*Annals of Surg.*, January, 1896; **Poirier** in the *Progrès Médical*, August, 15, 1896); **Gérard Marchant**, in the *Presse Médicale*, July 18, 1896). A suitable incision is first made in the temporal region, and a flap of skin turned up. Doyen uses a sickle-shaped incision, whilst Poirier employed a rectangular one with the base turned downwards, similar to that originally recommended by Pancoast. The zygoma is then cleared and turned downwards, and the coronoid process and temporal tendon turned up, as in Rose's operation. The under surface of the great wing of the sphenoid is then cleared with a raspatory, so that the foramen ovale can be accurately defined, and the third division of the nerve isolated. A wedge-shaped portion of bone is then removed, having its apex at the foramen ovale and its base directed outwards; Doyen recommends the use of a trephine in the first place, and afterwards of cutting pliers or *rongeur*. The dura mater is thus clearly exposed, and the middle meningeal artery upon it. By retracting the dura it is not difficult to follow up the third division of the nerve to the ganglion, which is exposed by opening up its sheath, and then it, together with the second division, can readily be divided, whilst the cerebral root is torn away from the pons, and the first division dealt with as well as the close proximity of the cavernous sinus will permit.

It appears that Doyen has performed this operation thrice; the first patient recovered, and has since remained free from pain,

whilst the two latter died—one from apoplexy, and the other from simple asthenia four days after the operation. In reality it is only a slight modification of Rose's original method, differing from it mainly in the amount of bone removed from the great wing of the sphenoid, and this may possibly prove to be an improvement, in that it secures a slightly better approach to the ganglion. At the same time Doyen's statistics are unfortunate, but with further experience it may be found that the death-rate is no higher than in other methods employed—viz. about 10 per cent. Naturally all these operations will be associated with some mortality, and the capability of the individual surgeon must, of course, largely influence the results obtained. Accurate anatomical knowledge and practice are absolutely essential to success.

Lumbar puncture of the subarachnoid space to relieve tension is a proceeding which, though formerly recommended and practised occasionally, has only during the last twelve months attracted much attention, and that mainly through the work of Quinke and Fürbringer. The literature associated with the subject is now very voluminous, since a considerable number of different affections has been experimented on by its means. Into all of these it is impossible to enter here, and we shall deal with the subject mainly from a surgical point of view.

The method usually adopted is as follows:—The object is to pass a small hollow needle into the subarachnoid space below the termination of the spinal cord, where the membranes are prolonged along the cauda equina. The cord ends opposite the lower border of the first lumbar vertebra in adults, and a little lower in children, and hence the needle may be inserted with safety between the third and fourth vertebræ. The patient is laid on the side with the legs flexed, and the puncture is made about two centimetres from the middle line in a direction upwards and inwards, so as to pass between the laminae of the afore-mentioned bones. Some little force may be needed to insert it through the tough ligamenta subflava. Quinke originally recommended the use of a Pravaz syringe, but he, as well as most authorities, now considers that a trochar and cannula, or an aspirating needle, is the better instrument to employ. The subarachnoid space is reached about two inches from the surface in an adult, and something less than an inch in a child. As soon as the cavity is entered fluid begins to escape, the force of the flow varying with the amount of intraspinal pressure. A manometer may be connected with the needle if thought desirable, and the exact pressure measured, anything greater than 150 mms. being considered abnormal; but, as a rule,

it is sufficient to note the rate of escape of the fluid. If it spurts out in a forcible jet, there is evidently a considerable increase in the pressure ; if it trickles out drop by drop tolerably quickly, the increase, though undoubted, is less serious ; whilst if it flows very slowly or not at all, the condition is normal. A more important point than the actual amount of pressure is the rapidity with which it has been developed. As a rule, no unpleasant after-effects follow the puncture, although occasionally a little tingling of the lower extremities has been noted, probably from injury of some of the nerve trunks ; this, however, soon passes away. No anæsthetic is usually required. The proceeding is generally quite simple in the case of children, but in adults some difficulty may be experienced.

The results hitherto obtained have been of value rather from a diagnostic than from a therapeutic point of view. Six actual cases of death have been recorded thus far, which can be attributed to the operation. Five of them were in the practice of **Fürbringer** (*Centr. für innere Med.*, 1896, Nos. 1 and 2), and one in that of **Lichtheim**. Four of them occurred in cases of cerebral tumour, and two in uræmic patients ; the former fatalities were probably due to the fact that the foramen of Majendie was occluded, so that when the spinal fluid was withdrawn, the brain was exposed to a negative pressure which drew it downwards towards the base of the skull and compressed it to such an extent as to lead to sudden death. **Lenhartz** (*Münch. med. Woch.*, 1896, Nos. 8 and 9), on the other hand, has operated on four undoubted cases of cerebral tumour without ill effects, although with no improvement to the symptoms of any duration. **Stadelmann** (*Berl. med. Woch.*, 1895, No. 27) also emphasises the importance of this occasional lack of communication between the cerebral and spinal cavities, causing the result of spinal puncture to be negative ; thus, in a case of purulent meningitis from fractured base, only a serous slightly blood-stained fluid was withdrawn, with no trace of organisms ; and the same result followed puncture in a similar condition resulting from middle-ear disease. And yet, in several of these cases, the ventricles of the brain were found *post mortem* distended with fluid.

Passing now under rapid review the other conditions in which it has been employed, the following facts may be noted :—

In *traumatic* lesions of the skull, information as to the position of a hæmorrhagic effusion may be forthcoming. Thus, if the fluid withdrawn is quite clear, the bleeding is probably extrameningeal ; if there is but little blood present, there is probably a limited subdural hæmorrhage ; whilst if the blood is abundant, a hopeless

laceration extending possibly into the lateral ventricle must be diagnosed. The operation is obviously of no therapeutic value in such cases. On the other hand, not only can lumbar puncture be of diagnostic value in spinal hæmorrhage, but it may considerably assist in healthy repair. Thus **Jacoby** (*New York Med. Journ.*, January 4, 1896) reports two cases of spinal hæmorrhage in which it proved of service, both sensory and motor phenomena improving after the removal of the blood; and **Kiliani** (*ibid.*, March 14, 1896) relates another instance where his diagnosis was confirmed in this way, and also where the symptoms were definitely ameliorated an hour after puncture.

In acute cerebrospinal *meningitis* no good is to be expected, except from a diagnostic standpoint. Thus in three cases **Lenhartz** was able to demonstrate the existence of diplococci (probably pneumococci) in the exudation. In subacute or chronic serous meningitis organisms have not been discovered, and the results here have been distinctly encouraging. **Lenhartz** reports five cases of recovery after repeated punctures, the symptoms always improving materially after each intervention. **Rieken** (*Deut. Arch. für klin. Med.*, 1896, ii., p. 130) relates two similar cases.

In *tuberculous meningitis* no good results have been recorded, although in many cases the diagnosis has been in this way confirmed owing to the presence of tubercle bacilli in the exudation. The fluid withdrawn in these cases is usually clear, but a delicate coagulum, which remains suspended, forms on standing.

Similar negative results follow interference in *general paralysis* of the insane (**Turner**, *Brit. Med. Journ.*, May 2, 1896), hydrocephalus, and many other similar conditions. An interesting observation was made by **Deniges** and **Sabrazès** (*Presse Méd.*, August 19, 1896, p. 415) in a case of hydrophobia, where the fluid withdrawn, injected beneath the dura mater of a dog, produced typical rabies in two months.

4. Surgery of the vascular system.

Suture of wound of the heart.—**Capellen** (*Norsk Mag. for Lægevidenskaben*, March, 1896) reports a case of stab wound of the chest, involving the pleural and pericardial cavities, and also extending into the muscular fibres of the ventricle but not penetrating the cavity. The man was found lying in a pool of blood with a wound in the fourth left intercostal space in the mid-axillary line, which was not then bleeding. He was extremely collapsed, scarcely breathing, and with no pulse at the wrist, although weak heart-sounds could be detected. He revived after an injection of camphor, and an exploration was then undertaken. A part of the fourth rib was resected, the pleural cavity opened,

and a considerable amount of fluid and clotted blood removed, after which the lung expanded. A part of the third rib was then also removed, and the pericardium exposed. A wound was found in it, and on opening the sac fluid blood was evacuated, and a wound, 2 cms. in length, found in the left ventricle. A bleeding artery was secured by ligature, and then the incision was sutured with catgut. The needle was partly inserted during one contraction, and carried through during the next. The patient lived for two and a half days, and died from exhaustion. The wound was found to be healing, but there was some commencing pericardial inflammation, and sundry forms of bacteria were present in the exudation. The case, though it terminated fatally, is most satisfactory, as showing the possibilities of surgical interference, and indicating that under more favourable circumstances recovery might follow.

Treatment of aneurysms by extirpation.—One of the most definite and most important benefits that have followed the introduction of antiseptics into surgery is the banishment of secondary hæmorrhage; in consequence of this we have been able to return to the original and ideal method of dealing with aneurysms—viz., by attacking them locally and dissecting out their walls as one would remove a tumour, either with or without a preliminary incision. In the original operation of Antyllus the sac was incised, and only the main trunk secured above and below, with the result that secondary hæmorrhage was almost certain to follow, if not from the main vessels, at any rate from the branches that might open into the aneurysm. By extirpating the mass, all these collateral branches can be secured, whilst there is no need to stuff the cavity, and thus healing by first intention is often possible; moreover, if the aneurysm is situated in the flexure of a limb a thick and puckered cicatrix is avoided, and thus the functional utility of the part is hardly at all impaired. **Kopfstein**, of Prague (*Wiener klin. Rundschau*, 1896, Nos. 11 to 16), has drawn attention to these and other points in discussing the results of eighty-six cases treated in this way. Of these, twenty-seven were idiopathic in origin and fifty-nine traumatic; twenty-nine occurred in the popliteal artery, fourteen in the femoral, and the rest were scattered tolerably equally over the body. Only three deaths ensued—one from loss of blood during the operation, one from secondary hæmorrhage, and the third after amputation for gangrene. The proceeding was followed by gangrene in only two instances (2·3 per cent.), and that in spite of the fact that the accompanying vein had to be excised in several instances. The

non-production of gangrene in the latter case is to be explained by the consideration that if the vein is so adherent to the sac as to need removal, it had necessarily been sufficiently compressed previously to open up the collateral circulation. As to the technique of the proceeding, the limb is first rendered bloodless and the sac cut down on; if the main trunk is easily reached, there is no need to incise the aneurysm, but if it overlaps the artery, then it must first be opened and the clots turned out. Of course, the greatest care must be taken of all the tissues to which the sac is adherent. There can be no question that aneurysms of all the smaller and more peripheral vessels should be dealt with in this way, and a variety of cases in which it has been undertaken has been recorded during the past year. (See **Howell**, *New York Med. Journ.*, August 15, 1896; **Heurtaux**, *Bull. et Mém. de la Soc. de Chir.*, 1895, Nos. 9, 10.)

Another case of successful *ligature of the innominate artery* for subclavian aneurysm emphasises the point that surgery directed to this trunk is coming more into the realm of practical expediency. **Burrell** (*Internat. Med. Journ.*, March, 1896) first secured the carotid, then divided the omohyoid and sternal origins of the sterno-mastoid and sterno-hyoid; the top of the sternum and inner end of the clavicle were then honeycombed by the trephine so as to allow them to be removed. By gently drawing on the carotid by means of the ligature around it, the innominate was reached below the aneurysm, and was tied in two places with the intention of dividing it between them; but this was, after all, not done, as the ligatures were not able to be tied as tightly as was desirable. The case did very well, although the patient died 104 days after the operation from dilatation of the heart and general arterial disease. The innominate trunk was found soundly occluded, and the aneurysm shrunken. This now makes twenty-four cases of ligature with five successes; the last three cases in which it has been performed have all recovered.

Ligature of the vertebral artery.—A successful case of ligature of this trunk for a non-traumatic aneurysm has been reported by **Hufschmid** (*Archiv für klin. Chir.*, 1896, Hft. I., p. 23). **Baracz** (*Centr. für Chir.*, 1896, No. 24) tied both vertebrales for epilepsy, allowing a fortnight to intervene between the two operations. Two days after the latter proceeding, paresis of both limbs occurred on the right side, as also of the right side of the face. This condition gradually disappeared in two months. He thinks the treatment useless for epilepsy, any benefit being merely

temporary, and possibly to be explained by interference with the sympathetic nerves in the neck.

Transperitoneal ligature of the external iliac artery.—**Davie** (*Brit. Med. Journ.*, April 11, 1896) reports a case in which he undertook this operation for an aneurysm of the left external iliac trunk, occupying the greater part of the iliac fossa. It did well, although the abdomen had to be opened again later to deal with intestinal obstruction, due to kinking of the intestines from inflammatory adhesions, arising probably from septic infection, since the wound suppurated. He considers that under the circumstances no other proceeding was possible, and recommends it in similar cases. With this we quite agree, although ordinarily the extraperitoneal plan is preferable. For dealing with the common iliac or the internal, the transperitoneal route should always be adopted.

Closure of arterial wounds by suture.—**Heidenhain** (*Centr. für Chir.*, 1895, No. 49) relates a case in which he successfully sutured a longitudinal wound of the axillary artery, made by an assistant with scissors during an operation for scirrhus mammae. The wound was half an inch long, and was sutured by means of a continuous stitch of catgut. Six months later pulsation could be felt throughout the whole length of the axillary trunk, and there was no sign of aneurysmal dilatation. Two similar cases have previously been recorded, in which the common femoral and common iliac vessels have been dealt with in the same way. **Jaboulay** and **Briau** (*Lyon Méd.*, January 19, 1896) have investigated this subject experimentally, and find that they can secure by sutures even transverse wounds of the whole calibre of the carotid trunks of dogs without interfering with the lumen or causing thrombosis. The great point is to use looped stitches inserted so as to bring endothelial surfaces together, and thus not to expose any rough substance on which thrombosis could occur. The animals were not, however, kept alive long enough to determine whether an aneurysm would subsequently develop. Whilst fully realising the value that this proceeding may have in dealing with small longitudinal wounds of an artery, we cannot think that surgeons would care to treat transverse wounds of a main vessel in this way.

5. Surgery of the lung.

There is a good deal of evidence to show that surgeons have nearly reached the limits of their powers in intrathoracic surgery, and indeed some of the proceedings that have been undertaken in the past have been shown to be useless, and in consequence are being abandoned. An excellent sketch of the possibilities

of surgery in dealing with affections of the lung was given by **Reclus** at the French Surgical Congress in Paris (*Rev. de Thérap. Méd. Chirurg.*, November 1, 1895). He divided his subject into three headings—viz. the treatment of hæmorrhage whether traumatic or pathological, of tumours, and of cyst-like cavities or spaces. As to hæmorrhage, comparatively little can be or has been done, and that little only in traumatic cases. As a general rule, rest, immobility of the side, and drugs must be depended on; but where, in spite of these precautions, the bleeding continues, and when there is an open wound into the pleural cavity, it is justifiable to expose the lung, and deal with the wound according to circumstances, either by ligature or plugging. **S. Paget**, in his recent book on the "Surgery of the Chest" (John Wright & Sons, Bristol; 1896), fully agrees with this conclusion. The excision of *tumours* (pneumectomy) can only be looked on as an occasional possibility. It may be called for in dealing with malignant disease that has spread to the lung from the thoracic parietes, and has not extended far; thus, in operating for sarcoma of the ribs, it may be necessary to take away part of the underlying lung. For primary cancer of the lung extirpation is impracticable, since the disease has usually attained considerable dimension before an accurate diagnosis is made. Attempts have also been made to remove the apex of the lung for tubercle; this has been accomplished in about seven cases, two only of which recovered. The operation is quite unjustifiable, since in the early stages, where the affection is limited to the apex, ordinary therapeutic measures will often suffice to bring about a cure. (See also p. 53.)

The surgical treatment of the third class of cases—viz. those characterised by the presence of a *cyst-like cavity*—is a little more promising. (1) For *tuberculous cavities*, incision and drainage are of little use, since the advantage that may presumably arise from it is frequently counterbalanced by the shock of the operation to the system, whilst nothing can be done to remedy the original disease, which runs its usual course. Of 100 reported cases, five died as the immediate result of the operation, seventy died within two weeks, and fifteen more in the next fortnight, so that only in ten was any benefit derived. (2) For *bronchiectasis* the results are good only where one cavity exists, and usually there are several. Incision and drainage are, however, justifiable, although the outlook is not exceedingly good; but where the dilatation is due to the impaction of a foreign body, the prospects are more hopeful, and we quite agree with **Godlee** (*Med. Chir. Trans.*, London, vol. lxxix., p. 197) that every effort should be

made to reach the intruding substance and remove it. Should the surgeon fail in his efforts to find it, a drainage-tube must be inserted down to the cavity so as to leave a track along which subsequently it may find its way. (3) For *hydatid cysts* there can be no question as to the value of pneumotomy, since, if cases are left alone, the mortality mounts up to 54 per cent. ; if simple puncture is adopted, 27 per cent. die, while after incision the death-rate is only 16 per cent. (4) *Pulmonary gangrene* should also always be operated on, since thereby the death-rate is reduced from 75 to 25 per cent. The cavity is opened, and, if superficial, may be scraped out. Of course, it is not called for where the necrotic process is very extensive, or where it is very limited and unaccompanied by toxæmic symptoms. (5) In *pulmonary abscess*, especially those occurring in the lower lobes after pneumonia, operation is always indicated. As to operative technique, it is usually advisable to divide the proceeding into two stages, if adhesions are not present ; the visceral and parietal layers of pleura are stitched together, and the wound plugged with gauze, and then a few days later the lung substance can be incised without risk of infecting the general pleural cavity.

6. Surgery of the thyroid and mammary glands.

Goitre and its Treatment.—One of the most interesting facts and discoveries of the year is that which has been notified by **Baumann** (*Hoppe-Seyler's Zeit. f. phys. Chemie*, vol. xxi., p. 319, and *Münch. med. Woch.*, April 7, 1896), who has succeeded in isolating what is probably the active principle of the thyroid secretion—viz. an albuminous compound containing iodine in a very close chemical combination, which he terms Thyriodine. It has long been suspected that iodine had much to do with thyroid metabolism, but until this discovery was made, no positive proof of this supposition was possible. The material is almost insoluble in water, only slightly soluble in alcohol, but dissolves readily in alkalies. It has already been shown that thyriodine has the same effects upon the system as thyroid extract in such affections as myxœdema, obesity, and parenchymatous goitres, but is more potent and rapid, and Baumann has also proved that there is a marked diminution in the amount present in goitrous thyroids, that there is less in children than in adults, and that the quantity varies in different animals, sheep's thyroids containing relatively the most. From this discovery it seems likely that the cause of goitre is to be looked for in an absence of iodine in the system, leading to a compensatory hypertrophy of the gland. The same body has also

been found in the thymus gland, and thus the beneficial results of this substance in some cases of Graves's disease may be explained.

The influence of thyroid medication on simple cases of goitre is now tolerably well established. **Angerer** (*Münch. med. Woch.*, January 28, 1896) relates his experiences in seventy-eight cases. He employed raw sheep's gland finely minced, and emphasises the necessity of its being absolutely fresh, corroborating Lanz's observation as to its early putrefaction, and agrees that many of the toxic phenomena following its exhibition are due to this cause. Of the seventy-eight cases treated in this way, only four or five remained totally uninfluenced. A few showed such reaction that its use had to be discontinued. In the majority the goitre soon showed sure signs of retrogression, except in the case of the hard fibrous growths. Cysts were themselves uninfluenced, but the glandular tissue around them atrophied, so that they became more superficial, and could subsequently be more easily enucleated. The same result occurred in adenomata, the isolated knots becoming more evident. It was also found that the soft simple goitres of young people were most easily influenced, and that the bleeding in any subsequent operations was diminished; but that there was a greater tendency to heart failure both during and after the proceeding in patients who had been previously treated in this way than in others. **Stabel** (*Deut. med. Woch.*, February 20, 1896) has obtained very similar results, but finds that the improvement is temporary, and that when the thyroid extract is discontinued, the goitre increases in size again. **Ewald** confirmed this, stating that he had never seen a case entirely cured by this means. **Cabot** (*Med. News*, September 12, 1896) has collected 322 published cases, and finds that 279 were reported as improved. He also agrees that it is in the recently formed parenchymatous goitres of young people that the best results are obtained. It is uncommon to see the tumour wholly disappear, only about 10 per cent. of the cases having so resulted, but often there remain only a few hard nodules not previously noticed, which can be easily dissected out. A very good summary of the whole subject of thyroid medication is given by **Faure** in the *Gazette des Hôpitaux* (August 8, 1896). As to the surgical treatment of simple goitres, nothing special has been recently added to our knowledge; partial thyroidectomy is practised for parenchymatous swellings, and Socin's operation of enucleation for cysts and adenomatous tumours. (See **Rivière**, *Gaz. des Hôpit.*, May 30, 1896, and **Bruns**, *Centr. für Chir.*, App. to No. 31, p. 66.)

The treatment of exophthalmic goitre, on the other hand, is

being considerably discussed, owing largely to the fact that no certain conclusion has been arrived at as to its pathology; for whilst some authorities strongly maintain Möbius' theory that it is due to the absorption of an excess of normal or vitiated thyroid secretion, others look on this as merely a single factor in the production of the symptom-complex of the disease. Consequently the treatment recommended varies greatly; in many cases all that is required is to remove the patient from the irritating and worrying surroundings that may be present, and to attend to the general health, whilst the cure of various causes of trouble within the body may suffice to put others to rights; surgical treatment is strongly commended by some, and by others is as forcibly condemned.

A number of cases has been reported as benefited by the administration of phosphate of soda, as alluded to in the latest number of the "Year-Book" (p. 206). (Thus see **Moore**, *Columbus Med. Journ.*, September 17, 1895, and **Starr**, *Med. News*, April 18, 1896). **Kocher** is so well pleased with the results obtained that he has allowed patients in his wards to be treated in this way, and has recorded the hope that we have here found a drug that may render operative treatment unnecessary in the future.

The use of thyroid extract or thyriodine in this affection has led to very variable results, the majority of practitioners agreeing that it does no good, and indeed rather tends to exaggerate the symptoms. Possibly it may be of some use in cases where there is a definite adenomatous tumour present, or where the goitre was present before the symptoms of Graves's disease manifested themselves. Thymus extract has also been used by some with excellent results, but with others no benefit followed. **Edes** (*Boston Med. and Surg. Journ.*, January 23, 1896) and **Maude** (*Lancet*, July 18, 1896) have both had satisfactory cases.

As to operative treatment, the best account is given in a paper by **Starr** already quoted. He was able to comment on 190 cases; of these, twenty-three died as the immediate result of the operation, seventy-four are claimed as complete cures, whilst forty-five were improved, three were not benefited at all, and the records of the remaining forty-five are not sufficiently accurate to be tabulated. The deaths resulted partly from immediate shock and hæmorrhage, but in part from a curious association of symptoms which commence usually about twenty-four hours after the operation with a rapid rise of temperature, great acceleration of the pulse, albuminuria, and delirium or coma, in which latter state the patient quickly dies. It is probable that these

phenomena are due to increased secretion and absorption of thyroid juice, and that it is a true thyroid toxæmia. The cures are almost all gradual in onset, the tachycardia and nervous irritability disappearing first, then the goitre diminishes in size, and finally the exophthalmos may diminish, although not uncommonly it persists. In not a few cases relapses ensue together with enlargement of the remaining portion of the gland. As to the type of operation, various methods have been employed, the chief among them being ligature of the afferent vessels, partial thyroidectomy, enucleation of an adenoma or cyst, or exothyropexy. The latter procedure has been introduced by Jaboulay, and consists of stripping the capsule from the gland, and fixing the latter in the superficial parts of the wound so as to allow it to shrink both from exposure to the air, and also from extension of thrombosis along the venous trunks. In all these procedures it is important to remember that the chief vascularity of the gland lies in its capsule. Another operative procedure which Jaboulay has recently recommended, owing to his dissatisfaction with exothyropexy, consists in division of the cervical sympathetic chain; of this three cases have been recorded (*Lyon Méd.*, March 22, May 31, 1896; and Gayet, *ibid.*, July 26, 1896).

As to the value of and indications for operative treatment in Graves's disease, authorities necessarily differ somewhat, and those who seem to have had but little experience are a good deal more enthusiastic about it than those whose opportunities of undertaking it have been more extensive. There can be no doubt that there is a considerable element of risk associated with the performance of any operation in this disease, owing to the excitable condition of the heart and the state of nervous trepidation and depression in which the patients are usually found. At the same time where general hygienic and therapeutic treatment has failed to give relief, there can be no doubt that in competent hands an increased chance of cure follows active operative interference. The actual choice of operation must necessarily depend to a large extent upon the characters of the goitrous tumour.

The treatment of carcinoma mammae is still receiving a great amount of notice from practical surgeons, and the question as to the extent of the operation which is advisable is being actively investigated and discussed. Watson Cheyne (*Brit. Med. Journ.*, February 15, 1896) devoted the first of his Lettsomian lectures to this subject, and the conclusions he has drawn are well worthy of the most careful study. The operation he advises is as follows:—The incisions should provide for the removal of an amount of skin nearly co-extensive with the prominent part of the

organ ; the integument is then dissected up around so as to leave nearly all the subcutaneous fat, and not to encroach on the glandular substance. The pectoralis muscle is exposed at the upper part, and the breast, together with the pectoral fascia and a thin layer of the muscle, is dissected downwards and outwards ; when the outer border of the pectoral has been reached, the fascia over the serratus magnus and all the fatty tissue, including lymphatics, as far back as the edge of the latissimus dorsi, are detached. This mass is turned outwards, so as merely to leave its prolongation into and connection with the axilla to be dealt with. The whole axillary cavity is then cleared out, leaving the margins as clean as in a dissection. It is most important to remove this portion in one piece together with the breast, so as to avoid any risk of infecting the wound by dividing cancerous lymphatics. Such is the smallest operation which Cheyne considers necessary in dealing with the condition, but of course it must be suitably modified to meet the requirements of special cases. Where the skin is much tacked down or invaded by the growth, the incisions must be correspondingly amplified, since recurrence in this structure is very common. Where the mass is adherent to the pectoral fascia, the whole thickness of the muscle at that spot should be removed, and since the lymph tends to travel along the course of the fibres, that portion of the muscle should be removed along its whole length. He does not agree with Halsted and the more vigorous American surgeons, who maintain that in every case the whole substance of the muscle should be extirpated as a routine procedure. If, however, the muscular tissue is itself evidently affected, the dissemination of the disease by the muscular contractions is such as to warrant much more extensive removal, although even here it is often possible to retain the clavicular segment—a most desirable proceeding, if safe, as it makes all the difference to the subsequent utility of the arm. As to the axillary glands, all must of course be removed, but the suggestion to open up the posterior triangle in all cases is not considered favourably ; where the highest axillary lymphatics are involved, it may be advisable to remove also the supraclavicular, but it is pointed out that there is a good deal more chance of the disease spreading along the lymphatics running with the subclavian vessels than upwards into the neck.

The following conditions are considered by Cheyne as excluding from operation—(1) Cases of cancer *en cuirasse* ; (2) where there is a large mass in the axilla involving the nerves ; (3) where enlarged glands can be felt above the clavicle ; (4) all cases

where secondary deposits already exist elsewhere. He admits, however, that some of these conditions may be dealt with by operation in order to remove the local disease, and thus by preventing pain and ulceration prolong life, and lead to a less painful death from internal deposits.

As to results of this more scientific method of operation than existed formerly, old statistics are mentioned, giving the cures as low as 5 per cent., and Butlin is quoted as claiming that only 12 or 15 per cent. of cures can be expected. Cheyne, however, takes as the basis of his report the three years' limit of Volkmann, and states that he has been able to cure not less than 57 per cent. of his cases. Without doubt this shows a considerable improvement in the operative technique of this disease, but whether a limit such as that assigned is a safe one to argue from is perhaps doubtful.

Arbuthnot Lane (*Lancet*, October 12, 1895) reports a most extensive operation which he performed for a patient in whom there was considerable infiltration of the skin as well as much glandular enlargement. Any ordinary procedure would have left an enormous area of raw surface uncovered, whilst it was very likely that the arm would be rendered useless from the implication of the axillary vessels and nerves. He therefore removed the arm at the shoulder-joint, together with the central portion of the clavicle, and thus was able to clear away all the enlarged glands, whilst the skin from the back of the shoulder and outer side of the arm was utilised to cover the loss of substance anteriorly. The patient recovered, but no further report of the case has been given.

Charters Symonds (*Brit. Med. Journ.*, February 8, 1896) relates three cases of carcinomatous cysts of the breast, in two of which the patient was first dealt with on the idea that the cyst was simple; the carcinomatous character was rendered unmistakable subsequently by recurrence and infiltration. These facts emphasise the point that all cysts of the breast should be incised, and not merely tapped, and wherever feasible the wall should be cleanly dissected out and examined microscopically.

Cure of inoperable cancer of the breast by oöphorectomy and the administration of thyroid extract.—**Beatson** (*Edin. Med.-Chir. Journ.*, August, 1896) reported to the Edinburgh Med.-Chir. Society three cases of scirrhus, which had extended so far as to render operation out of the question. One of them was a recurrent growth, involving the chest-wall. They were treated at first with thyroid extract, but as this did not seem to do any good, the ovaries and tubes were removed, whilst the thyroid treatment was

continued. The recurrent case was apparently cured : the patient has now remained free for twelve months ; the tumour in another case diminished considerably in size, the pain vanished, and on microscopic examination the growth was found to be in a state of fatty degeneration. On this basis, Beatson built up a hypothesis that cancer is directly connected with deviations from the normal in the condition of the sexual organs. Several well-known authorities, including Chiene, Simpson and Stiles, agreed that the results gained by the author of the paper were extremely remarkable and suggestive, although they could not agree with the opinions propounded as to the origin of cancer. Chiene in particular stated that he thought that after such an experience every practical surgeon ought to give women with inoperable cancer the chance of cure by removal of the ovaries and tubes, although this proceeding should not be undertaken lightly or until other measures had failed.

7. Surgery of the abdomen.

The parietal incision.—Ramsay (*Lancet*, November 30, 1895) discusses the points for and against opening the abdomen in the middle line. The advantages claimed for such a procedure are that the vascularity is low, and that there is therefore less hæmorrhage ; that there are fewer and less important structures to cut through ; and that there is a greater facility of access to all parts of the abdomen. *Per contra*, it is maintained that the low vascularity is a frequent cause of defective healing and of a weak cicatrix, whilst it is perfectly easy to secure any bleeding points in an incision placed elsewhere ; that it is often more difficult to distinguish the structures in the middle line than in other regions owing to the similarity of all the parts to one another, especially when infiltrated with inflammatory œdema ; and again that access to the abdominal contents can be as readily obtained elsewhere. The incision recommended is one placed to one or other side of the linea alba, through the fibres of the rectus muscle, which are separated with fingers or blunt instrument, and not cut at all. Considerable stress is laid upon the method of suturing which is subsequently adopted. It is recommended that first of all a series of silkworm-gut stitches should be inserted through all the layers, including the skin, but that they should be held aside and not tightened, until the peritoneum has been secured separately by a continuous silk or catgut stitch, and then the muscle itself, including its anterior aponeurotic sheath. Finally the silkworm-gut stitches are tied, the wound dressed, and the stitches left *in situ* for ten or fourteen days.

We fully agree with Ramsay's conclusions when dealing with

a clean-cut incision, except that we should not pass the deep stitches through the peritoneum. When, however, dealing with inflammatory lesions which may require drainage, the median incision through the linea alba is preferable, as it would be dangerous to admit virulent septic material within the sheath of the rectus. (See on same subject *Edebohls, Med. and Surg. Reporter*, September 12, 1896.)

The subject of *abdominal drainage* has received attention at the hands of the Chicago Gynæcological Society (*American Gyn. and Obstet. Journ.*, March, 1896), and a number of excellent papers were read, by **Senn** and others. The conditions under which drainage is called for did not lead to much difference of opinion, the chief ones being suppuration of any type, whether generalised or localised, bleeding that cannot well be controlled by ligature or hot sponges, cysts and cavities which have been opened and cannot be removed entirely, and complications arising during operation due possibly to rupture of viscera in such positions as may preclude efficient closure. Senn emphasises the point that the necessity for drainage depends largely on the carefulness of the operator. "The surgeon who has the ambition to operate quickly, to make an impression on the bystanders, should drain frequently ; while, on the other hand, the surgeon who proceeds with his work carefully, step by step, with plans well laid out, with his practical knowledge resting on a firm pathological basis, will only drain in exceptional cases."

Drainage may be effected in two ways—viz. by tube or gauze. Formerly the tube alone was used, and especially the glass tube known by the name of Keith. But although occasionally indicated, there are very obvious objections to its frequent use : thus it cannot adapt itself to the inequalities of the wound or follow the irregular pockets and valleys that may be present ; again, the fluid tends to collect within it, and must be aspirated or drawn off by suction, a process that necessitates continual interference and the risk of septic contamination at each dressing ; whilst finally the unyielding nature of the tube may lead to serious mischief from ulceration of the intestine. None of these objections can be urged against the gauze drain, which can be fitted accurately into all the holes and depressions of the wound, which needs no constant attention, and which does no harm to the intestines or other viscera with which it may come in contact. Gauze drainage may be established by means of packing or by a capillary drain. The former of these plans is employed when there is an expectation of oozing from a considerable surface, or when it is desirable to shut off a portion of the peritoneal cavity that is actually infected,

or liable to infection, from the remainder. It must be remembered, however, that this method of tamponade, as originally recommended by Mikulicz, is not a very satisfactory means of drainage, since the meshes of the gauze become infiltrated by lymph, and thus the capillary or suction power of the contrivance is diminished, or abrogated entirely. It must therefore be removed in the course of a few days, and replaced either by a rubber tube or by a capillary gauze drain. This latter contrivance consists of a strip of gauze loosely rolled so as to form a sort of lamp-wick, which is inserted into the depths of the cavity, whilst the free end is surrounded by a mass of dry gauze or similar hydrophile dressing. The section of the drain need not be large, the power exerted by it depending on a connection being established between it and the dry dressing, which should be sufficiently abundant. **Morris** (*Lectures on Appendicitis, and other notes*, in the *Knickerbroker Press*, Putnams, New York, 1895) recommends that the gauze wick should be enveloped in a layer of guttapercha tissue, leaving an inch or so of the deep end free, whilst holes are cut along its length so as to allow fluids to enter it and be drained off in the course of the wound. This is a contrivance of which very favourable reports are given.

Another subject that led to discussion was the best site for drainage. Necessarily in many cases there is no choice but to drain through the wound in the anterior abdominal wall. The disadvantages of this course are very obvious, since it is opposed to gravity, and also necessitates the fixation of some of the viscera to the wall by the adhesions that subsequently form, whilst at the same time it increases the risk of a subsequent hernia. Hence whenever feasible—i.e. when dealing with pelvic conditions, and even in cases of diffuse peritonitis—many authorities are now practising vaginal drainage, opening the vagina through the posterior cul-de-sac, and inserting therein either a tube or gauze packing. By this means gravity assists drainage, whilst there is a minimal disturbance of the intestines; the only objections to be urged are that the vagina is not a sterile canal, while the uterus itself may contain septic material. These objections are, however, met in practice by thoroughly washing out the vagina and packing it to the outlet with gauze, whilst uterine trouble can be dealt with by dilating the canal and scraping or disinfecting the endometrium. There can be little doubt that vaginal drainage is a distinct advantage in the cases indicated above.

The *fixation of loose and movable viscera* is to a large extent quite a recent development. It has long been known that the kidney at times becomes displaced from its ordinary

site, and that various tolerably characteristic symptoms ensue; but it is only during the last ten years that special attention has been directed to other viscera, and that mainly owing to the appearance of Glénard's papers on the subject. It is now well established that the stomach, colon, small intestine, spleen, and even the liver not at all uncommonly become displaced downwards, and that some of them become tolerably freely movable. In consequence of this, severe dyspeptic phenomena may be induced, and in neurotic women this may be so aggravated as to lead to a condition of general neurasthenia. The causes of Glénard's disease, as it is sometimes termed, must be looked for in general relaxation of the abdominal parietes and of the supporting ligaments of the viscera; possibly pregnancy and heredity are important factors. It is generally supposed that the transverse colon is first involved, and that perhaps from atonic constipation and the weight of retained fæces; the stomach then follows, giving rise perhaps to pyloric obstruction from kinking; then the liver and kidneys, particularly the right, are also drawn downwards. Of course, almost any of the viscera may be affected apart from the others. The treatment of this condition consists in supporting the abdomen in such a way as to overcome the bad effects of the downward displacement, and this can often be accomplished by wearing a carefully fitted belt; but in the more serious cases surgery has now stepped in, and a number of instances have been recently reported in which the stomach, transverse colon, liver and spleen have been successfully fixed.

Hepatopexy, or fixation of the liver.—**F. Treves** (*Brit. Med. Journ.*, January 4, 1896) operated on a young lady, aged twenty-two, who had for years suffered in this way, and was the subject of severe neurasthenic phenomena; she was quite unable to stand without a very strong abdominal support, and this caused her such distress as to render her practically bed-ridden. The abdomen was opened in the median line above the umbilicus; the liver at once came into view, and was remarkably movable. Below it the stomach was, with some difficulty, seen and found to be fixed in a position much lower than usual, owing to the great omentum being rolled up into a round and rigid cord, and firmly attached to a mass of stony hardness in the right iliac fossa. A second incision was made over this mass, which was found to consist of a collection of old tuberculous glands in the mesentery of the ileum. These were removed, and the attachments

of the omentum ligatured and divided; the other pelvic viscera were normal. The stomach was then found to be freely movable, and could be replaced in its normal position, as well as the liver. The latter viscus was fixed by inserting three sutures through the fibrous tissue of the parietes, close to the xiphoid cartilage, and through the hepatic substance, including the round and falciform ligaments, which gave them a firm hold. The parietal incisions were closed, and the patient made an excellent recovery. Five months later the liver remained in place, even when the patient stood erect; she could walk without discomfort, and the old gastric symptoms had almost entirely vanished. **Franke** (*Centr. für Chir.*, No. 32, 1896) relates a very similar case, where the liver was displaced downwards, but without any apparent reason. The swelling caused by it was thought to be due to a movable kidney, and a lumbar exploration was accordingly undertaken. It was then apparent that the kidney was quite normal as to situation and mobility, and the abdomen was accordingly opened by an incision parallel to the border of the ribs. The liver was replaced and secured by eight or nine stitches of catgut, which passed through its substance and the parietal wall, except at a spot corresponding to the gall-bladder, where a gauze tampon was inserted. The wound closed rapidly, and the site of the tampon by granulation. In another case a woman of forty-one years had suffered from dyspepsia and other abdominal symptoms for some time. This was supposed to be due to the mobility of the right kidney, which was accordingly fixed in the usual way. Some two months later the symptoms recurred, and on abdominal section a movable pedunculated portion of the liver was found nearly separated by cicatricial contraction from the main mass of the organ, which was itself somewhat mobile. Fixation was accomplished partly by sutures and partly by tamponade. The patient made a good recovery, and the abdominal symptoms disappeared. Somewhat similar cases have been recorded by **Bastianelle** and **Mayo Robson**. The latter (*Brit. Med. Journ.*, March 14, 1896) removed a pedunculated portion together with the gall-bladder, which was the seat of malignant disease, by withdrawing the mass from the abdominal cavity, encircling it with an indiarubber ring, and transfixing the base so as to prevent its slipping back. The mass was then cut away and the abdomen closed. The case did well.

Gastropexy, or fixation of the stomach, has also been undertaken. **Duret** (*Revue de Chir.*, June, 1896) opened the

abdomen in the middle line, but incised the peritoneum only for the lower portion of the wound. The stomach was easily found and replaced. It was fixed by suturing the pylorus to the anterior abdominal wall. The suture was first passed through the serous and muscular coats of the bowel, and then through the parietal peritoneum; this was done in three or four places, so as to bring considerable surfaces into contact. The result was most satisfactory, indigestion and obstinate constipation being cured, and there was a corresponding gain in weight and appearance. Duret suggests that if the transverse colon is affected, a similar proceeding can readily be undertaken for it.

Splenopexy, or fixation of the spleen, was referred to in the last edition of the "Year-Book" (p. 232). Several cases have been reported during the last twelve months in which good results were obtained. **Kouwer** (*Wiener klin. Woch.*, No. 43, 1895) has operated twice; in one case he attempted to stitch the spleen to the parietes, but the stitches cut out, causing such bleeding that the actual cautery had to be employed to stop it; he finally passed a gauze tampon down to the spleen and closed the abdominal wound around it; in this way the spleen became firmly fixed. In a second case he attempted the same proceeding, but the tampon had to be removed early owing to its causing obstruction, and the result was unsatisfactory. **Giordani** (*Rif. Med.*, February 8, 1896) has had a successful case in a girl aged ten years, in whom the displacement was associated with profound anæmia, and frequently repeated hæmorrhages from the nose and gums. The incision was made along the outer border of the right rectus, and the enlarged spleen fixed outside the peritoneum to the abdominal muscles in a kind of peritoneo-aponeurotic sac, the stitches passing through fibrous trabeculæ in the organ. The result was most satisfactory, the spleen remaining fixed, and the anæmia diminishing.

In conclusion *nephropexy*, or nephrorraphy, has so often been described and performed that no special notice of it need here be taken, except to mention that in bad cases a new operation, suggested by **Vulliet**, and performed by him, and in England by **Carless** (*Clin. Journ.*, February 5, 1896), holds out a good promise of being more successful than the ordinary plan. It consists in cutting down on the organ through the loin in the usual way; a second small incision is then made parallel with the spines of the vertebræ, and through this one of the tendons of the spinalis dorsi is secured, and torn away from

its upper attachment, a portion eight or ten inches long being thus obtained. A connection is now made between the two wounds, and the tendon is pushed through into the lumbar incision. It is now passed under the capsule of the kidney from above downwards, and attached to the muscular tissues in the lower margin of the wound. The kidney is thus slung on a tendinous support, and the results of the two cases reported have been very satisfactory.

Gastrostomy was formerly an operation that held out but little prospect of satisfactory relief to the patient who was being slowly starved to death as the result of œsophageal stenosis, whether due to a simple stricture or to malignant disease. This was due to two main causes: in the first place, the operation was almost always undertaken at too late a date; and in the second, the actual technique of the operation was defective, resulting in subsequent prolapse of the mucous membrane and regurgitation of the gastric contents, which led to a most troublesome and intractable form of eczema, owing to the partial digestion of the skin by the escaping gastric juice. **Wölfler**, in discussing the advances of abdominal surgery at the late Surgical Congress at Berlin (*Centr. für Chir.*, 1896, Appendix to No. 31, p. 93), stated that up to 1883 Mannaberg had collected 162 cases with a mortality of 66·7 per cent., whilst between 1883 and 1886 eleven cases gave a death-rate of 36·9 per cent., and probably at the present time it would be considerably less.

In the "Year-Book" for 1895 the modern method of performing the operation so as to obtain an oblique or valvular opening was described, special attention being directed to Frank's and Witzel's operations. During the past twelve months but little has been done in Great Britain beyond a few casual notices of operations, and an attempt to furbish up once more the old plan of gastrostomy by a direct opening. Thus **Golding-Bird** (*Brit. Med. Journ.*, January 4, 1896) makes an opening on the fourth day into the stomach, just large enough to admit a No. 10 catheter, and dilates it with laminaria tents until he can slip in a piece of drainage-tube the size of his forefinger. The contraction of the sinus holds this firmly in position, one end projecting slightly into the viscus, and the other projecting about an inch from the skin, where it is closed by means of a cork. A patient on whom he tried this plan has had no regurgitation after an interval of two months. **Harrison Cripps** (*ibid.*, June 6, 1896) has utilised another plan for both gastrostomy and enterostomy, in order to keep the patient dry and clean. A disc of sheet india-rubber of medium thickness and about twice the diameter of the

opening to be closed is threaded on a loop of silk in such a way that when rolled up and inserted into the viscus, it can be drawn up against the inner opening of the aperture so as to act as a valve. The loop of thread is, of course, retained outside, and tied over a roll of lint of suitable size and consistence. The apposition of the disc to the inner wall is thus secured, and the greater the pressure within, the more perfect is the closure. When the patient is to be fed, all that is needed is to untie the loop of silk, and let the disc slip backwards: as soon as the feeding is completed, the disc is readjusted. In three cases this method has acted excellently. **Cotterell** (*ibid.*, June 27, 1896) uses a catheter of the Jacques type, around which is fixed an indiarubber valve, which expands like an umbrella on being drawn up against the abdominal wall. All these methods, however admirably they may act in certain special cases, are unsatisfactory from this point of view, that they are mere adjuvants of a bad operation. The desideratum in gastrostomy is such an opening into the stomach that the patient can walk about without plug or valve, and yet not suffer from regurgitation of the gastric contents.

On the Continent and in America Frank's and Witzel's operations seem to be firmly established. An excellent account of the former by **Morton**, of Philadelphia, appears in the *Medical News*, January 25, 1896, with good illustrations (see also **Chavasse**, *Lancet*, July 4, 1896). Occasionally the stomach may be so contracted and atrophied that it is impossible to withdraw it sufficiently to enable the Frank operation to be undertaken. For this condition **Kader**, of Breslau (*Centr. für Chir.*, July 11, 1896) has devised a plan which he has carried out with success eight times, and which his senior colleague, Mikulicz, has undertaken twice. The stomach is exposed by the usual incision parallel to the ribs, and the rectus muscle is divided longitudinally. A minute opening is made into the viscus, and through this is inserted a suitable length of drainage-tube, which projects for a centimetre or two into the cavity, whilst on the outer side it is secured by a couple of stitches passing through the tube and the peritoneum. The tube is then buried by forming two superimposed folds involving the serous and muscular coats of the stomach, which are united by Lembert's sutures. These folds may be placed either vertically or transversely, as may be most convenient; as a general rule, where the œsophageal stenosis is malignant, it will be best to make them in the vertical direction, but where retrograde dilatation of a simple stricture is to be undertaken, it may be better to make them horizontally, as thereby better access to the cardiac orifice is obtained. Finally,

the summit of the superficial fold is fixed to the parietal peritoneum by a row of deep stitches, and the abdominal wound is then closed around the tube. By the time the wound is healed the rubber tube will be set free, but the sinus thus formed, though direct, is so guarded by muscular tissue, first of the stomach wall and then of the rectus, that regurgitation does not occur. The author maintains that the success which has hitherto followed the new operations is due not so much to the oblique position of the fistula as to the muscular tissue which is incorporated in its walls, since after a little time the passage, at first oblique, always becomes straight.

Intestinal resection and suture.—There has been considerable discussion relative to this subject, and a number of new methods of enterorrhaphy has been devised and reported, the majority of which need but little notice. One of the most important contributions was the masterly survey of the whole field of intestinal surgery by Wölfler at the late Surgical Congress held at Berlin (*Centr. für Chir.*, 1896, Appendix to No. 31). After relating the historical development of his subject, he turns to results and methods. A number of cases in the practice of some of the most prominent German surgeons give a total mortality of 39·5 per cent. for intestinal resection; if, however, the cases that were done prior to 1888 are separated from those performed since that date, the death-rate is found to have diminished from 42 per cent. to 36 per cent. Dealing with the situation of the operation, out of 221 resections, it is found that for the small intestine the mortality was 30 per cent., for the ileo-cæcal region 42 per cent., and for the large gut 49 per cent. Considerable differences occur in the results of individual surgeons, however, as Körte has performed nine resections of the cæcum without a death, and Czerny eight cases with but one fatality. Coming now to the character of the causative lesion, it is found that recovery ensued in 78 per cent. of the cases of artificial anus that were subjected to resection, for tuberculous disease in 73 per cent., for cicatricial stricture in 65 per cent., for tumours in 46 per cent., and for chronic intussusception in 77 per cent. The highest mortality, therefore, occurs in dealing with the intestinal neoplasms, and this is not to be wondered at when one considers that the majority of these are of a cancerous nature. As to methods, while admitting that for rapidity nothing can compare with Murphy's button, yet two grave objections to it exist that render it scarcely a desirable contrivance for general use—viz. that the aperture of communication cannot be made as large as is desirable, owing to the increase in size of the button

which would be essential, and that it is not an absorbable substance, and may lead to harm from its pressure effects. On the whole Wölfler inclines to lateral approximation by simple suturing.

Murphy (*Medical News*, Nov. 16 and 23, 1895) has published a further report of cases dealt with by his button. He has now been able to collect 156 cases of intestinal resection in which union was conducted by this means, of which number thirty-three died, giving a total mortality of a little over 21 per cent. Of the total cases thirty-four were resections for gangrene, with a mortality of under 24 per cent.; fifteen for faecal fistula, of which 20 per cent. died; sixty-six for non-malignant internal obstruction, with a death-rate of under 10 per cent.; and forty-one were undertaken for malignant disease, with a mortality of 37 per cent. These results are certainly highly satisfactory, but in spite of this the main current of opinion in Great Britain is against this contrivance for end-to-end union. Thus **Edmunds** and **Ballance** (*Trans.-Med. Chir. Soc.*, 1896, vol. lxxix., p. 255) in an admirable paper read before the Medico-Chirurgical Society of London, after detailing the chief methods that have been employed, and illustrating them by sections, concluded in favour of Maunsell's method for end-to-end union, and of Halsted's plan for lateral approximation. They also pointed out the fact that with the Czerny-Lembert suture a considerable ridge was left on the inner wall of the gut which subsequently diminished the lumen of the tube, whilst nothing of this sort occurred after Maunsell's operation. In the discussion that ensued, the conclusions of the authors were generally admitted to be justified by experience, although lateral approximation was, on the whole, considered to be a more successful procedure than end-to-end union.

Mayo Robson (*Trans. Clin. Soc. Lond.*, 1896, vol. xxix., p. 142) recommends a new form of bobbin, which in his hands certainly has given admirable results. It consists of a tube of decalcified bone, the ends of which are rounded, and the intermediate portion of smaller calibre than these ends. It is inserted in the bowel, but merely lies within it, acting as a firm basis on which to perform the suturing by Halsted's or Lembert's methods, and subsequently as a splint to protect for a day or two the line of union from faecal contamination. He was able to report nine cases with but one death. The bobbins are made by Down Bros.

Wiggin (*New York Med. Journ.*, December 14, 1895) has revised and re-written Maunsell's original article, giving exact details as to the various steps of his operation, and illustrating a

new form of intestinal clamp designed by McLaren, of Litchfield, Conn. He has been able to collect nine successful cases of the operation, and two failures, although the list of successes is certainly incomplete.

Chaput, of Paris (*Sem. Méd.*, 1895, No. 62, and *Gaz. Méd. de Liège*, January 9 and 30, 1896) has devised an anastomotic button, which whilst combining some of the advantages of Murphy's, has features of its own, which in his opinion render it much preferable. It is made of pure tin in the shape of an elliptical ring, the hole in the centre being five millimetres wide and thirty long. Looked at from the side, it shows a semicircular groove 1 centimetre wide and 8 millimetres deep. Five different sizes are made, and it is applied in much the same way as a Murphy button with a couple of purse-string sutures tied in the groove so as to secure approximation, but without injurious pressure. The advantages claimed for it are that it can be applied as quickly, or even more so, than the Murphy button; that it is smaller in actual size, although the opening is of greater lumen, and that it is more easily detached and set free. Naturally, it has all, or nearly all, the disadvantages of Murphy's contrivance in the fact that it is hard and non-absorbable, and that it may become imprisoned in the gut. Several excellent results have been reported, but it is probable that after a short time we shall have such improved better contrivances at our disposal that but little will be heard of it or of its predecessors.

Infantile intussusception.—**Wiggin** (*Medical Record*, January 18, 1896) read a paper at the New York Academy of Medicine on this subject, analysing the results gained in 103 cases, especially with a view to contrasting the effects of distension with air or water on the one hand, and laparotomy on the other. The necessity for interference is indicated by the statement that fully 98 per cent. of the patients die if left alone. Of the 103 children, thirty-nine were treated by inflation or enemata, and of these 16, or 41 per cent., recovered, whilst the remainder died unrelieved. In sixty-four cases laparotomy was undertaken with twenty-one successes—i.e. 32·8 per cent. recovered. In most of these cases enemata had previously been employed, but without result, and in none of them was resection called for. The average length of the case prior to operation was 39·4 hours. Of the forty-three that died, twenty occurred prior to 1884, whilst the average duration of the case before operation in the last twelve (dating from 1887) amounted to 65·4 hours. In a few cases reduction was accomplished without much difficulty, whilst in others it was impossible, and either resection or the formation of an artificial anus was called

for. The results of this investigation certainly show in the most lurid light the evil effects of delay, though even when some cases are taken early, the same undesirable termination is arrived at. Moreover, if, during the laparotomy, reduction is not easily accomplished, probably the temporary establishment of an artificial anus is the best means of giving relief.

Intestinal exclusion.—It has long been the practice of surgeons to treat inoperable malignant disease of the intestine by making an artificial opening either above or below the growth, as may best suit the requirements of the case; below it, where the upper part of the tube is involved, as in gastrostomy for œsophageal cancer; above it, where the lower portion is affected, as in colostomy for rectal cancer. It is only within recent years that an attempt has been made to short-circuit the diseased gut. At first this was limited to uniting healthy portions above and below the disease, as in gastro-enterostomy; but recently the more satisfactory method of entirely excluding the diseased segment from the continuity of the intestinal canal has been demonstrated as practicable. The chief advantage of this proceeding is that irritation of the growth by the onward passage of the contents of the bowel is removed, and therefore that the progress of the affection is appreciably delayed. Not more than twenty-two cases of this proceeding have been published; of these only three died, giving a mortality of about 14 per cent. Very considerable discussion has arisen as to whether or not it is advisable entirely to close the segment to be excluded. Naturally it is *primâ facie* desirable to do so, but it must be remembered that the mucous membrane of the segment still exists and can continue secreting, whilst there may also be discharges from the growth. The old plan of shutting off only one end of the loop, and leaving the other in connection with the intestine, is not altogether to be recommended, since faecal material may find its way into the *cul-de-sac*, and lodging there may do considerable mischief. Hence it has been proposed to bring one end of the excluded coil out of the abdominal wound, and stitch it to the parietal peritoneum so as to form a fistula, and then after a time, if the discharge diminishes sufficiently, it may be closed by a plastic operation. A careful study of the cases reported and of sundry experiments on animals seems to indicate that the mucous lining of a portion of the small intestine continues secreting even after it has been isolated from the rest of the gut, but that there is scarcely any secretion to speak about from the large intestine; hence it has been laid down that in the former case a fistula must always be established, whilst in the latter, it may be desirable to take this precautionary

measure if there is much destruction of tissue or much discharge, whilst if the gut is tolerably healthy it can be safely closed. This same type of operation is also indicated for intractable fistulæ of the cæcum or appendix; it will usually be found that the discharge from the fistula gradually diminishes in amount after the operation until it is possible to close it entirely by a plastic operation. (See **Von Eiselsberg**, *Ned. Tijdschr. v. Geneskunde*, No. 8, 1896; **Luhrs**, *Münch. med. Woch.*, No. 33 and 34, 1896; and **Obalinski**, *Centr. für Chir.*, No. 34, 1896.)

Appendicitis still serves as a fertile subject for discussion, especially as to whether it should be treated by the surgeon or by the physician—*i.e.* as to whether or not it is to be treated by operation in every case. There are certain manifestations which all agree should be dealt with by operation, such as when the symptoms of acute diffuse peritonitis supervene, or when a localised abscess has formed. When, however, an attack occurs in which these definite indications are absent, it is still more or less a moot point as to when the surgeon should interfere, or whether he should be called in at all. One school of surgeons, headed by some of our energetic American brethren, maintains that every case should be operated on, and if possible within twenty-four hours of the onset of symptoms, whilst the more conservative class, including a large number of English practitioners, would interfere only where there are definite symptoms of an abscess. Which of these plans of treatment is the better to follow? Each side will be able to point to facts and statistics in favour of its own ideas, but the arguments adduced are often somewhat one-sided. During the past year several communications of importance have been made.

One of the formal discussions at the late British Medical Association dealt with this subject (*Brit. Med. Journ.*, October 10, 1896). **MacDougall**, who opened the discussion, after passing in review the causes, symptoms, diagnosis and prognosis, dealt with the treatment in a way that is certainly in favour of operation. Every case should have the advantage of being seen by a surgeon as well as by a physician, although he does not state that every case needs to be operated on. Certain "grim records" are mentioned by him as worthy of the most careful attention. Thus, during the last three years, 151 patients were admitted into the wards of the Edinburgh Royal Infirmary suffering from "appendicitis, typhlitis, or perityphlitis," and of these thirty-seven died—*i.e.* 25 percent. Again, in St. Thomas's Hospital from 1892 to 1894, and in St. Bartholomew's from 1893 to 1895, 208 cases were admitted for the same conditions, and the mortality amounted to nearly 20 per cent. **Morton**, of Bristol, commented on one of MacDougall's remarks

“that with the most anxious care we may be sadly deceived in our prognosis,” basing thereon an earnest plea for early interference in every severe case. He finds that in Murphy’s record of 141 cases, many of the most severe attacks commenced in exactly the same way as the less serious ones, and he contrasts the above mortality with that following the practice of operating on every case. Murphy out of 141 cases lost only two patients, excluding twelve in whom general peritonitis was present at the time of operation. Morris, of New York, (*American Med. Surg. Bullet.*, February 22, 1896), reported 100 consecutive cases of appendicitis operated on with only two deaths, and without a single case of post-operative hernia. Of these thirty-four were acute cases with abscess, four were chronic with an abscess, twelve were acute without abscess, and forty chronic without abscess. The remaining ten were operated on for cancer, tubercle, torsion, or impacted concretion. The appendices were removed in all but five of the acute cases, and in several of this type considerable degrees of toxæmia and peritonitis were present. Morris employs a very small incision, wherever practicable not exceeding an inch and a half in length; the abscess cavities are disinfected with peroxide of hydrogen and saline solution, and he most emphatically condemns the use of the Mikulicz drain, preferring his own drainage wick described elsewhere. In his book on this subject, he draws a most admirable contrast between two supposed cases, one of which is operated on by his method within twenty-four hours of the onset of symptoms, while the other is left to get well of itself and to relapse. Dieulafoy in France (*Presse Médicale*, March 11, 1896) is also most emphatic in his declaration that no medical treatment exists for appendicitis. “One never repents for having operated on appendicitis, but one often repents for not having operated, or for having operated too late.” As Morris remarks:—“The affected appendix is a cap which sometimes snaps, sometimes flashes, and sometimes causes an explosion, and none of us can tell in advance what is going to happen.”

In conclusion we venture once more to emphasise the fact that there is still amongst our medical colleagues at home a most injudicious and unadvisable hesitancy in calling in the assistance of a surgeon except as a last resort. Every operator is constantly being brought face to face with cases in which precious time has been wasted in a most reckless manner, with the result that the patient is brought into the very jaws of death, and then the surgeon is expected to be able to save him; whereas if the operation had been undertaken before the constitution had been undermined by toxæmia of a grave nature, or the general

peritoneal cavity infected, there can be but little doubt that the case would have had a very different termination. The cardinal symptoms of appendicitis are perfectly definite as a rule—viz. fever, vomiting with or without constipation, pain in the right iliac fossa, and tenderness over McBurney's spot. A tumour may or may not be present, which can be felt in the iliac fossa, and which consists, not of a phlegmon, as so many consider, but of a mass of intestine bound together by lymph in order to localise and limit, if possible, the spread of the mischief; but there is no knowing whether this is going to be successful. Under such circumstances, the patient should be put to bed, his diet limited to fluids, and, perhaps, a little morphia administered. An aperient enema is also frequently useful to unload the bowels. If by the end of the second day the patient is not better—i.e. if the pain in the groin continues, or is worse, and if the pulse-rate is rising, even though the temperature is dropping, operation should be undertaken without delay. The association of a low temperature with a high and rapid pulse is always a bad sign, and **Willy Meyer** (*Med. Record*, February 29, 1896) rightly lays great stress on it. Of course we have not been speaking here of those cases which start with an acute diffuse peritonitis owing to perforation of the appendix. In such, there is no need to delay operation an hour longer than is absolutely necessary.

One other point, noted by MacDougall and others, is worthy of attention—viz. the importance of examining all these patients *per rectum*. The appendix frequently lies directly behind the cæcum, and if it points to the left side its apex may come to lie just above the brim of the pelvis, and then any abscess which forms may tend to burrow downwards into the pelvic connective tissue, and may even be found behind the rectum.

As to whether or not the appendix should be removed in every case, much will depend on the stage which the disease has reached. If the early operation is adopted, there will usually be but little difficulty in isolating and removing it; but where a large abscess has formed, it will often be a matter of great difficulty to find it, and the interests of the patient will probably be best consulted by leaving it alone, and, if need be, removing it later during a quiescent period.

ORTHOPÆDIC SURGERY.

By W. J. WALSHAM, F.R.C.S.,

*Senior Assistant-Surgeon, Lecturer on Anatomy, and Surgeon in Charge of the
Orthopædic Department, St. Bartholomew's Hospital.*

1. The treatment of congenital club-foot.

L. A. Sayre (*New York Med. Record*, 1896, xlix., p. 512); Kirrison (*Revue d'Orthopédie*, July, 1896); R. H. Sayre (*Trans. Amer. Orthopædic Assoc.*, 1896); Kent Hughes (*Intercolonial Med. Journ. Australasia*, March 20, 1896).

Nothing very new or original has been published either on the operative or the mechanical treatment of club-foot. The reason for this does not seem far to seek, since so much activity has been displayed in recent years in the free division of soft parts, excision of wedges from the tarsus, removal of bones, etc., that little, one would imagine, remains to be done. If the treatment of club-foot is undertaken early, no matter how severe the grade, the most successful and most satisfactory results should be obtained. Perhaps the chief fault we have to deplore is that so frequently any active treatment, or, indeed, any treatment at all, is deferred till the child is several months or even a year or more old. It cannot be too strongly insisted on that the correction of the deformity should be begun within the first forty-eight hours of life, or even, as Sayre puts it, as soon as the child has been washed. The nurse should be instructed to hold the foot in as near a corrected position as it can be forced without unduly interfering with the circulation, some minutes at a time, and to repeat this procedure at frequent intervals during the day. There is no instrument equal to the human hand for correcting the foot, and nothing better than plaster-of-Paris for retaining it in the corrected position. Much has been written of late, and by surgeons of repute both general and orthopædic, on the desirability of dividing the tendo Achillis as the first operative procedure. Kirrison again insists on the desirability of thoroughly correcting the varus before the tendo Achillis is touched. This point was strongly urged by Adams many years ago, and, as the outcome of a considerable experience, I can vouch for the very

excellent results that can thus be obtained. The varus should be absolutely overcome in the early weeks by manipulation and hand-pressure, and division of the tibials or ligamentous bands if necessary; later, by plaster-of-Paris, or the simple varus tin splint in the way described by Adams; then, when the foot hangs when at rest in a line with the limb, the tendo Achillis should be divided, the heel gradually brought down as far as it will go, and the foot placed in plaster-of-Paris. At the end of a few weeks a simple apparatus with a cog-wheel at the heel should be applied, and worn till the foot can be dorsi-flexed to an angle of 30° . No doubt there is nothing new in this, but amongst the numerous fresh methods that are continually being recommended, this thoroughly efficient treatment is apt to be lost sight of. It is because of neglect to begin the treatment early, and to correct the varus, that so many intractable cases are still met with. Club-foot in childhood and in adult life should not exist.

In the treatment of intractable cases the simple measures that suffice in infancy are quite useless, and surgical procedures become necessary. Phelps, at a discussion at the American Orthopædic Association, lately advised that after his open incision, if the foot cannot be rectified, the neck of the astragalus should be cut through; or, if this fails, that a V-shaped piece should be cut out of the os calcis; or, if this is not enough, the scaphoid and cuboid should be ablated. He lays down the rule that if, after subcutaneous tenotomy, the foot cannot be reduced with strong manipulation, "begin by cutting the soft parts; if you fail with that, cut the hard parts; whilst, finally, if the foot does not come round, do a Pirogoff's operation."

Kirrmisson advises a modification of Phelps's open incision, and believes that were this modification practised there would not be the many failures there are after Phelps's method. It is done as follows:—Supposing the left foot to be affected, a transverse incision is made two or three millimetres in front of the internal malleolus, a little behind the transverse tarsal joint. This incision extends from the junction of the inner and middle thirds of the sole, and is continued upwards on to the dorsal surface of the foot, to about a centimetre to the outer side of the tibialis anticus. The internal saphenous vein and the tendon of the tibialis anticus are divided; the abductor hallucis is next cut through, and the tubercle of the scaphoid laid bare. The knife is now carried behind the tubercle of the scaphoid, dividing the tendon of the tibialis posticus at its insertion into the scaphoid, and the medio-tarsal articulation is opened by cutting through the superior and inferior astragalo-scaphoid ligament. By twisting

the foot the articulation is opened, and the bistoury is passed deeply between the bones, and the Y ligament completely cut through. The foot is now forcibly corrected by tearing down any ligamentous fibres that may remain. The tendo Achillis is not divided till the correction of the varus is complete.

Kent Hughes advises the removal of a wedge from both the astragalus and os calcis, and claims better results than can be obtained by astragalectomy, the excision of a wedge from the tarsus, or by Fitzgerald's operation of subcutaneously dividing the astragalus and os calcis and forcing the bones into place. He performs his operation by first removing an oval piece of skin from the dorsum and outer part of the foot. The incisions are commenced above, over the neck of the astragalus, and continued downwards behind the prominent boss of the os calcis. About the middle of the wound the tendons of the peronei longus and brevis are hooked out of their sheath and held aside. The neck of the astragalus having been laid bare and the periosteum stripped up, with a flat chisel the bone is divided close to the ankle-joint, the chisel being passed from the outer-side and behind, inwards and slightly forwards. A second incision in front of this is next made through the bone, and a wedge removed. A wedge from the os calcis is then cut out in a like manner. The foot is now placed in plaster-of-Paris.

Sayre, in a very severe case, in order to avoid interference with the tarsal joints, removed a wedge of bone from the tibia and fibula sufficient to allow the foot being brought to a right angle.

2. The treatment of flat-foot.

Royal Whitman (*New York Med. Rec.*, November 23, 1895); Meyer (*ibid.*, December 9, 1895); Lovett (*New York Med. Journ.*, June 20, 1896); Lovett and Dane (*Trans. Amer. Orthop. Assoc.*, vol. viii.); Moore (*ibid.*); Walsham (*ibid.*).

Judging by the discussions that have been published of late, there would seem to be a growing consensus of opinion that for the treatment of early flat-foot—or weak foot, as it has been proposed by Whitman to call incipient cases in which the arch has not yet broken down—exercises, massage, and passive movements give the best result. This treatment by exercises, which has been so ably and persistently advocated by Ellis, has, from time to time, been fully reported in former articles in the “Year-Book,” and is no doubt familiar to its readers. Ellis trusts to exercises and properly-shaped boots, and would appear to disapprove of any form of support, inasmuch as he considers the pressure of such can only conduce to the atrophy of the short

muscles in the sole. "In many cases," says Whitman—and in this the reporter fully concurs—"this very simple treatment is all that is necessary, and the symptoms of strain and tire completely disappear. But in cases of greater severity the patient is not able to prevent deformity voluntarily; consequently, a support is necessary to hold the foot in a proper position to relieve discomfort. In supplying a support, the nature of the deformity that is to be prevented should be borne in mind. Flat-foot is not a direct breaking-down of the arch, but a lateral deviation and sinking—a compound deformity; so that a brace, to be efficient, must hold the foot laterally as well as support the arch. At the same time, it should not prevent the normal motion of the foot, and thus interfere with increase of muscular strength and ability on which ultimate cure depends. The supports which have been ordinarily used for flat-foot do not fulfil the conditions; the pads and springs placed beneath the arch are intended to support it by direct pressure without regard to the valgus or abduction." The Whitman brace, which is a great improvement on these, is made of steel, is quite unyielding to the weight of the body, and is accurately moulded to the sole from a cast taken of the foot. It clasps, as it were, the weak part of the foot, and holds it together. It is shaped something like the well-known surgical sole, but has an upright tongue on the outer side. The broad internal upright portion covers and protects the astragalo-scaphoid junction, rising well above the scaphoid; the external arm covers the calcaneo-cuboid junction and the outer aspect of the foot to a height sufficient to hold the foot securely; the lower portion provides a comfortable support for the sole, yet, reaching only from the heel to the head of the metatarsal bones of the great toe, it does not restrain the normal motions of the foot. Not only does it hold the foot laterally and from beneath, but there is an element of suggestion in the slight leverage that is very important. The patient, instructed to throw his weight on the outer side of the foot, presses down the external arm; and this tightens the internal flange against the inner side of the foot, so that he instinctively draws in the weak part of the foot, away from the pressure, or into the normal contour. He no longer everts the foot in walking, and he is not likely to assume the passive attitude, because of the suggestive lateral pressure of the support. In severe grades of flat-foot neither exercises nor braces are of much or any service until the valgous deformity has been reduced. Flat-foot, it cannot be too often reiterated, is not a mere giving way of the arch, but an exaggerated condition of the position which the remainder of the tarsal bones

hold to the astragalus in extreme abduction of the foot ; and it is not until the astragalus has been forced back into place, or, rather, until the abducted and everted tarsal bones have been drawn round the astragalus, that the arch can be restored. In neglected cases, bones become fixed in the abducted or valgus position—first, by spasm of the muscles, especially the peronei ; later, by shortening of the ligaments ; and, ultimately, by the formation of new bone around the distorted joint. Whilst the bones are held in the distorted position more by the spasmodic action of the muscles, correction can be accomplished by manipulation. The foot is taken in the surgeon's hand, and, whilst pressure is made on the prominent astragalus, the heel and fore part of the foot are forcibly and steadily inverted and adducted—drawn, as it were, over the astragalus, the latter bone then appearing to sink back into place. This manipulation causes considerable pain on its first application, but less each time it is applied, and, if persevered in, is often sufficient to overcome the deformity. In other cases, an anæsthetic is required. Under its influence the spasm ceases, and such adhesions as exist are then broken down by the movements of flexion, extension, abduction, and adduction, and normal range of movement restored. When the foot, however, cannot be forced beyond the right angle with the leg, Whitman advocates the division of the tendo Achillis. As a substitute for the anæsthetic, Walsham has of late employed the Tallerman-Sheffield localised hot-air bath. After the rigid foot has been in the bath at a temperature varying from 270° F. to 280° F. for half or three-quarters of an hour, if osseous changes have not already occurred, it often comes out quite supple, and, on taking it in the hand, the arch can be restored without any pain on the application of force. The rigidity, however, soon returns. Whilst supple, therefore, the foot should be placed in plaster-of-Paris in the restored, or, better, over-corrected position. The bath should be repeated at intervals of a week or less till the foot shows no tendency to assume its former rigid and abducted position.

Moore, in an extreme case, has removed the astragalus, but the result does not appear to have been satisfactory. Meyer, who was formerly an enthusiastic partisan of Trendelenburg's supra-malleolar osteotomy, and has performed it ten times in five patients, has come to the conclusion that it should be reserved for the most severe cases. He recently showed a patient at the surgical section of the New York Academy of Medicine on whom he had performed this operation three years previously. The arch, which had been quite restored by the

operation, soon afterwards sank, and necessitated, some months later, forcible rectification.

3. Treatment of Morton's disease and metatarsalgia.

Tubby (*Lancet*, October 31, 1896). Goldthwait (*Trans. Amer. Orth. Assoc.*, vol. vii.). Weigel (*ibid.*, vol. viii.). Pierri (*Rif. Med.*, December, 1895). Gibney (*Journ. of Ner. and Men. Dis.*, September, 1894).

Since this condition was described by Morton and attributed by him to compression of the digital nerves between the heads of the fourth and fifth metatarsal bones, considerable attention has been given to the subject, but since no opportunity has occurred for the actual demonstration of the condition *post mortem*, it is somewhat doubtful on what this pain in the metatarsus depends. The treatment of the affection has consequently not always been satisfactory. The pain is not invariably confined to the head of the fourth metatarsal, but has been observed about the head of the second and third metatarsals. The head of the third has appeared enlarged, as well as prominent in the sole. In many cases the trouble would seem to depend in part upon an osteo-arthritis. Hence such constitutional remedies are advised as have at times been found useful in that disease. Locally, soaking the foot in hot water, the application of glycerine and belladonna and rest, will temporarily relieve the spasm. In Weigel's experience metatarsalgia often occurs in anæmic and neurotic subjects, and he suggests that it is then but an expression of an impaired constitutional condition. The treatment which he has found of most benefit in such cases is the use of the galvanic current, combined with appropriate constitutional remedies. Gibney has found that when the bases of the metatarsal bones are compressed, the heads are separated. He therefore recommends that the boot should fit closely over the instep, whilst plenty of room is allowed for the heads of the metatarsal bones. By the application of a tight-fitting bandage around the instep an endeavour may also be made further to compress the bases of the metatarsal bones. Weigel, when a support seems advisable, uses a phosphor-bronze plate moulded to the sole of the foot, and long enough to support the heads of the metatarsal bones themselves. Ryan has found strapping the feet with adhesive plaster give a great deal of relief, and claims some cures where this treatment was kept up for some months. Goldthwait, in place of a rigid support, employs a felt pad reaching as far forwards as the heads of the metatarsal bones, but trusts more to exercises, massage, and well-fitting boots than to any forms of support. In intractable cases, Tubby

proposes the removal of the head of one of the metatarsal bones, and would choose the one over which there was the largest corn. Pierri, in a severe case in a girl of twenty-two, in whom the pain was located in the head of the fourth metatarso-phalangeal joint, injected tincture of iodine periarticularly, with the view of tightening up the ligaments. Seven injections were given, with the result that the patient lost the pain, which had not returned when the report was made five months afterwards.

4. The treatment of paralytic deformities of the lower limb.

Goldthwait (*Trans. Amer. Orthop. Assoc.*, vol. viii.). Schwartz (*Revue d'Orthopédie*, May, 1896). Martin (*ibid.*, July, 1896).

Goldthwait reports successful cases of tendon transplantation after the method of Nicoladoni. In three cases he united the peroneus longus to the tendo Achillis, and the peroneus brevis to the flexor longus pollicis. In two cases the anterior tibial tendon was attached to the peroneus tertius. Four of the cases are reported at least three months after the operation—one after a year. These operations have for their object the transplantation of the tendon of an unparalysed muscle to the tendon of one that is paralysed. From the experience I have had of this operation, there appears to be a danger of the united tendon giving way. This happened to me in a case in which I united the peroneus longus to the tendo Achillis some six months after the operation, in consequence of a sudden movement produced by the patient slipping.

5. Treatment of slipping patella.

Bradford (*Trans. Amer. Orthop. Assoc.*, 1896). Goldthwait (*ibid.*).

Attention was drawn to this subject some years ago by Newton Shaffer and Walsham. In their cases there was elongation of the patellar ligament; in only one of Bradford's cases was this condition found. Where there is no elongation of the patellar ligament, Bradford recommends a steel appliance that consists of two uprights hinged at the knee, extending from the middle of the calf to the middle of the thigh on each side of the limb, and connected with cross-pieces above and below. To these are attached, at the middle of the level of the patella, semilunar patella-plates, which are of such a shape or are bent in such a way as to press upon the sides of the patella. They are covered with padding and leather. If leather straps pass diagonally from the upright to button upon the top and bottom of these plates, an adequate amount of side pressure will be

secured. Two straps from underneath the knee prevent the apparatus from falling forwards, and the straps mentioned prevent the apparatus from slipping backwards. The appliance is provided with a spring at the knee to keep it in the straight position except when bent by muscular effort. In a young lady aged thirteen, in whom gymnastics, massage and electricity had been employed for years, Bradford succeeded in preventing the slipping by performing the following operation :—

A semilunar incision was made across the inner side of the knee a half-inch anterior to the tubercle of the internal condyle. The upper end of the incision extended 3 in. upwards, and the lower portion was curved so as to cross the ligamentum patellæ at its insertion into the tubercle. The ligamentum patellæ was found to be $\frac{1}{2}$ in. longer on the left side than on the right. It was divided by means of an oblique incision passing from without, inwards and downwards. A curved incision was next made through the capsular tissue of sufficient depth and extent to allow of drawing the patella to the inside if the divided edge was pulled upon. This was done without opening the joint, the serous surface of the synovial sac not being interfered with. After drawing the cut edge to the inside by means of forceps, it was stitched $\frac{1}{2}$ in. nearer to the condyle. At the same time, the patella was forced down and the divided ligament stitched in such a way that half of the cut edge on the inner side was secured to the aponeurosis of the leg $\frac{1}{2}$ in. lower than its previous position. The remaining portion of the obliquely incised ligament was stitched in such a way that the upper portion was slid one-half downwards, and the lower portion was brought up and sewn to the side and top of the ligament to reinforce its strength.

Goldthwait, in a patient in whom a dislocation of the patella had existed for twenty years, succeeded in replacing the patella by dividing the capsule on the outer side so as to allow the patella to be put in its proper place. The patellar ligament was divided and fixed to the periosteum over the inner side of the tibia. The loose capsule on the inner side was then taken up by a through-and-through suture, but the attachments of the quadriceps had to be divided almost completely to relieve the strain.

6. The treatment of congenital dislocation of the hip.

Broca (*Revue d'Orthopédie*, November, 1895). Openshaw (*Trans. Clin. Soc.*, 1896). Bilhaut (*Trans. Amer. Orthop. Asssoc.*, 1896). Brodhurst (*Revue d'Orthopédie*, January, 1896, and July, 1896). Tubby (*Brit. Med. Journ.*, September 12, 1896). Lorenz

(*Trans. of the Congress of German Surgeons, Berlin, May, 1896*). Mikulicz (*ibid.*). Schede (*ibid.*). Hoffa (*ibid.*).

At the German Congress of Surgeons, held last May, the treatment of congenital dislocation of the hip formed one of the subjects of discussion. Since Hoffa and Lorenz brought the open method of reduction so prominently before the profession some years ago, the subject has attracted considerable attention, and although the operation does not appear to have been taken up very warmly in England, it has been performed frequently both in France and Germany, and in the United States. Hoffa and Lorenz's modification of it have already been described in detail in former "Year-Books." Lorenz has done the operation over 200 times, and claims great success. In the hands of others, however, this can hardly be said to have been the case, although numerous successful cases have been reported during the year. Thus out of a total of twenty-eight cases Broca lost no fewer than five, four from septicæmia and one from acute tuberculosis; and Gibney's results (see last year's "Year-Book") were not more encouraging. Lorenz himself at the last Congress now advocates the reduction of the deformity by a modification of Paci's method (see "Year-Book" 1895) by manipulation; that is by flexion, abduction and rotation outwards under chloroform. In this method when successful, the head is felt and heard to return into the rudimentary acetabulum with a distinct snap. The limb is then placed in a position of abduction with slight rotation outwards, for some weeks; and this abduction gradually lessened until the limb can be extended without the limb leaving the socket. He advises that the attempt at reduction should be made at an early age, and believes that if it were more often then attempted there would be less call for the open operation. He has treated thirteen cases in this manner, and claims successful results in all. The point on which he most strongly insists is that the limb must be kept abducted, not extended, after the head of the bone has been brought down to or introduced into the rudimentary acetabulum. Schede recommends early treatment. He holds that in children who have not walked a direct pull upon the femur, combined with slight abduction, is sufficient to bring the head into the shallow acetabulum, and that slight lateral pressure upon the trochanter, combined with abduction of the limb, is sufficient to keep the bones in contact till a new joint is formed. He maintains the apposition by means of an ingenious splint, working with an abduction-screw. Hoffa, whilst still holding that in certain cases the open operation may be required, also advocates an early reduction by Paci's method, and keeping

the limb in the abducted position, in unilateral cases in plaster-of-Paris, in bilateral cases in a modified Mikulicz splint, till a new cavity is formed. Mikulicz aims at bringing the head opposite or into the rudimentary acetabulum, and then by means of a specially constructed apparatus, keeps up continuous pressure between the bones. Unlike Paci and Lorenz, however, he draws down the head of the bone by extension. He then fixes it in a position of extension, abduction and rotation outwards. This is accomplished by a specially contrived splint, and weight and pulley over the end of the bed. It need only be worn during the night in most cases. The child may go about with a light felt support during the day. The head is thus gradually reduced into the acetabulum in from four to twelve months. In last year's "Year-Book" it was reported that the celebrated case of continuous extension of Dr. Buckmaster Brown had relapsed, and Meyer stated he had not met with a single case in which this method had been tried that had not relapsed sooner or later. On the other hand, Adams reports six cases in which he had carried out Dr. Buckmaster Brown's treatment with excellent results.

The treatment of congenital dislocation has certainly been advanced a stage by the work that has been recently done. The most important point that can be insisted upon is the *early* reduction, *i.e.* before the child begins to walk. In very many cases the head can no doubt then be replaced in the acetabulum by manipulation or extension, its reposition under manipulation being both audible and palpable. At this early stage, there is, as a rule, little or no contraction of the muscles, and the head can readily be drawn down and manipulated into the rudimentary socket. In older children, where the muscles have contracted, and the bone has been forced farther from its natural position by walking, reduction may also sometimes be accomplished by manipulation, but in these cases it may be necessary to apply preliminary extension for some months or even to perform subcutaneous tenotomy of certain muscles before the head and the acetabulum can be brought into contact. Of scarcely less importance is the recognition of the well-known pathological fact that the pressure of the head of a dislocated bone makes for itself a new cavity in the bone with which it has been brought and kept in contact. By substituting the position of abduction for that of extension, the head of the femur is not only brought into contact with the rudimentary acetabulum but presses into and deepens that cavity by its own weight. Further, the fixation of the bone in this position by plaster-of-Paris does away with the necessity for the long period of recumbency

which in itself is so great an objection to the continuous extension method.

BIBLIOGRAPHY.

Tubby: "Deformities." London, 1896. (Macmillan & Co.)

Walsham and Hughes: "Deformities of the Human Foot." London, 1895. 12°. Pp. 550. (Baillière, Tindall & Cox.)

Phocas: "Leçons cliniques de Chirurgie orthopédique." Paris, 1895. (Baillière et fils.)

Barwell, Richard: "Causes and Treatment of Lateral Curvature of the Spine." 5th Edition. London, 1895. (Macmillan & Co.)

Caussin: "Contribution à l'étude de la Tuberculose vertébrale antérieure." Lille, 1895.

Forissier: "Contribution à l'étude de la paraplégie dans le mal de Pott." Lyon, 1895.

Brodhurst: "Observations on Congenital Dislocation of the Hip." 3rd Edition. London, 1896. (Churchill.)

Lapeyre: "De l'anatomie du pied bot varus équin et de son traitement par la tarsectomie." Paris, 1895. (Steinheil.)

Beuttner: "66 Fälle von Spondylitis." Berlin, 1895. (C. Vogt.)

SURGICAL DISEASES OF CHILDREN.

BY EDMUND OWEN, M.B., F.R.C.S.,

Senior Surgeon to the Children's Hospital, Great Ormond Street, and Surgeon to St. Mary's Hospital, London.

"THE DISEASES OF CHILDREN, MEDICAL AND SURGICAL,"* by Dr. Ashby and Mr. G. A. Wright, of Manchester, has just entered upon its third edition. From the opening chapters, which deal with the physiology of infancy and childhood and with the diseases incident to birth, to the appendix and the formulæ with which the book closes, it shows throughout extensive and practical acquaintance with the subject. It is, indeed, an excellent book. Great care has been bestowed upon it so that its teachings may in no point lag behind the most recent advances.

The first subject to which we turn on opening the book is that of diphtheria, with the object of seeing what views the authors hold concerning the antitoxin treatment. On p. 293 we find the cautious expression of opinion that the serum treatment "appears likely to take an important place in the treatment of diphtheria." Probably this is as much as anyone is justified in saying at present; it would, I confess, have come both as a surprise and a shock if our authors had gone in advance of facts. We certainly do not yet know the place that this antitoxin is to occupy amongst our remedies, and it does not speak strongly in its favour when we find some of its friends who are eager to prove its value by statistics, calmly omitting from their calculations those cases in which injections were made in what appeared and proved to be "hopeless." But this is being done. Then, again, as others have pointed out, slight cases in which the Loeffler bacillus is found are now put down, and correctly so, as diphtheria which in former years would have been regarded merely as transitory sore throats, the clinical signs not being urgent enough to suggest their diphtheritic nature. These cases get well now, as they did before, but they add up most happily among the favourable

* Enlarged and improved edition, 8vo, 814 pages, with 178 illustrations. Price 24s. London: Longmans, Green & Co.

results of the injection treatment. I have not a word to say against the method of Behring and Roux; I am hopeful for it and I employ it, but I am by no means convinced at present that it has the therapeutic value with which it is so widely accredited.

Concerning the treatment of diphtheritic laryngitis by intubation, our authors say: "In one instance in which we performed intubation a portion of the membrane was pushed down before the tube and the child instantly choked; it was only by immediate tracheotomy and the use of artificial respiration that breathing was restored. We have had some experience of the method in various forms of laryngeal obstruction, and have not been led to take a very favourable view of its suitability for cases of diphtheria where false membrane in any quantity is present."

The way in which the medical and the surgical author have worked side by side in this volume is highly satisfactory. Nothing of importance in children's diseases and ailments seems to have escaped them, perspective has rarely been lost sight of, and the conjoint result of their labours is everything that could be desired.

1. Tuberculous glands.

To the operating surgeon, as well as to the physician and the general practitioner, one of the most interesting subjects discussed in the "Children's Section" of the Carlisle meeting of the British Medical Association was the treatment of tuberculous glands. The subject was introduced by **Roderick Maclaren**, senior surgeon to the Cumberland Infirmary, who remarked in the course of his address that if the diseased glands be left alone they commonly cause years of ill-health, with constant risk of consecutive development of disease elsewhere, and that it has therefore been the practice of recent years to get them away as soon as it becomes apparent that the enlargement is more than a mere passing state. This removes the first line where infection has halted, with the result that, in many instances, it ends the disease and allows the patient to pick up general health; and that even when the glands have been long enlarged, and have contracted adhesions to all the structures round them, when they are friable and break down during removal, and when the wound is deep and complicated, with thorough removal of diseased tissue and free douching before closing the wound, primary union still occurs in a large proportion of cases. If it does not, however, tardy healing, repeated gland abscesses, and operations are apt to make slow the progress of the case to final cure.

Harold Stiles, M.B., F.R.C.S. Edin., was of opinion that the chief primary sources of irritation were the tonsils, the naso-pharynx, and the teeth. Starck, he said, on examining 113 children with tuberculous cervical glands, found carious teeth in 80 per cent. of the cases. And, in connection with this remark, I would take the opportunity of again* urging that when a child is brought to a dental surgeon on account of a carious molar tooth, to the presence of which the enlargement of a neighbouring cervical gland is probably due, he will do better by extracting the tooth forthwith than by clearing it out and filling it. Admitting for a moment that he can render the pulp cavity and its offshoots aseptic, he can never deal effectually with the septic tissue beyond the apex of the fang; for this, extraction gives the only chance.

Stiles advocates the teaching of Kocher—namely, “to make all incisions parallel to the skin creases—that is to say, more or less at right angles to the long axis of the neck. As regards the size of the incision, it need not be large; but unless the abscess be very small, it should at any rate be large enough to admit the finger.”

To this I venture strongly to take exception, for if one gland is tuberculous and needs ablation, the probability is that the next gland above it in the chain, and perhaps the one below it, or two, three, four, or more glands below it, are infected, and had better come away. The surgeon never knows exactly what is before him when he undertakes one of these operations. Indeed, I entirely agree with Roderick Maclaren when he says, “The operations are usually troublesome, much more so than many with high-sounding titles and described as ‘capital.’ The glands are placed deep and wide among important structures. When the conspicuous gland or glands are removed others, previously undetectable, come into view, till often the dissection leads far from the original incision. The best course is to face these difficulties and get the glands out whole if possible; this I find much better than incising and emptying the capsule.”

The incision, therefore, I would maintain, should in every case be parallel with the glandular chain—that is, in the *length* of the neck, and not across it—so that as the surgeon proceeds he has merely to lengthen his incision as more room is needed. Sometimes, indeed, it happens that the surgeon has to weed out enlarged glands all down the chain, from the front of the transverse process of the atlas even to behind the clavicle. What good would transverse incisions be then?

It is a very trying operation, but in London by no means

* *Trans. of Odont. Soc. of Gt. Brit.*, No. 8, 1894.

a very uncommon one. It can be thoroughly effected only by a longitudinal incision, and that often an extensive one.

For the stuffing of the cavity with iodoform-worsted, as recommended by Stiles, I have never seen the necessity. Having rendered the wound absolutely dry and clean with pledgets of alembroth wool, I close the wound entirely (unless I have cut away unhealthy skin, or have thought it expedient to insert a slender drainage-tube for twenty-four hours), and then I put on wood-wool pads under firm pressure. The wounds almost invariably heal by first intention, and the way in which Nature subsequently makes the best of, and hides away, the scar is to me a source of equal wonder and gratitude.

I would urge the operator, therefore, absolutely to disregard Kocher's advice about making the incision in the crease of the neck, and I would also offer him the advice (which contemporary writing renders by no means superfluous) not to have his heart set on making his incision "small." He can never *know* exactly what is before him when he begins the operation, and unless he is prepared to take away every infected gland, he had better not meddle with the case at all. The course of the proceedings at Carlisle showed that the surgeon who has received the parental sanction to his operation should never promise to make a small incision—or promise anything else which it is not in his absolute control to fulfil. More than this, a surgeon should never undertake this or any operation with his hands in any way tied; he should be trusted for all—the proverb is "something musty." And whilst upon the subject of promises preliminary to operation, I would say, the less of them the better. If a surgeon cannot get permission to operate on a child without giving assurances to the parents that there is no danger in what he proposes to carry out, or that there shall be little or no scar left, or that the child can be put to sleep with chloroform "with perfect safety," he had better altogether decline to take charge of the case. Especially in the removal of tuberculous cervical glands do risks abound. And though I have never known a case end fatally, I am sure that my experience has not been peculiar when I confess to having been rendered extremely anxious in some of my operations. Lastly, however apparently slight any operation is likely to be, one should never say that there is "no danger." There are risks beyond human control in every operation, and though they may be in most cases insignificant, the prudent surgeon will reckon with them, for he cannot eliminate them.

In his paper, Stiles remarked that he has met with "respiratory troubles" in cervical gland operations, and he thinks

that these may have been due to irritation of the superior laryngeal nerve. Possibly so. The crisis apparently comes on just when the surgeon is at the deepest and most anxious part of his dissection, and on several occasions in my experience the disturbance has been most alarming. When it occurs there is nothing for it but for the surgeon quickly to stuff some dry sponge or alembroth wool into the wound and to lend a hand in holding the child up by the heels, and help in performing artificial respiration.

Towards the end of his excellent paper Stiles gives a wise caution against applying a lateral ligature to a wound in the internal jugular vein. The only safe way of dealing with such a wound is by dividing the vein at that spot after having tied it above and below. But it came somewhat as a shock to find him advising the sacrifice of the internal jugular vein offhand as it were, if it happened to be in the way of his work. "It takes much less time," he says, "to resect the jugular vein with the glands adherent to it than to dissect them off the vein." Where "time" is so great a consideration the practice is without doubt commendably expeditious, but it strikes one as somewhat arbitrary and severe. However, it is marvellous how tolerant the child is of the loss of an internal jugular vein.

One last word about this vein. We used to be taught that in tying an artery in its continuity the opening into the sheath should be large enough only for the admission of the aneurysm needle, lest, the vasa vasorum being torn through, the vessel-wall should slough, and fatal hæmorrhage occur. But after some of these extensive operations for the clearing away of tuberculous glands, two inches or so of the vein are left in the depths of the wound absolutely bare of all connections. Yet I have never known sloughing to occur. The explanation is that years ago the wounds were septic; to-day they are clean, and doubtless the artery could to-day tolerate the denuding process just as happily as does the vein.

Reverting again to Maclaren's address, I would quote with much satisfaction his concluding expression of opinion:—"In a large matter like this, involving cure or death, health or invalidism, the appearance of a scar is but a small matter; but still it is worth noting that a well-placed linear cicatrix is after a few months almost invisible, contrasting favourably with the puckered and depressed scars resulting from natural cure, and associated in the public mind with scrofula and constitutional taint."

2. Congenital sterno-mastoid tumour and wry-neck.

Ludwig Pincus, of Danzig (*Zeitschr. für Geburtsh.*, Band xxxi., 1895), writes a learned essay upon the subject, to which he devotes upwards of 100 pages, with 220 references, and he traces, as others have done, the after-history of certain cases of sterno-mastoid tumour in which wry-neck subsequently appeared. This article is a work of monumental industry. Pincus urges that gynæcologists should make themselves familiar with the lesions which may occur at birth.

Bilton Pollard has given an analysis (*Clin. Journ.*, July 29, 1896) of twenty-three cases of congenital sterno-mastoid tumour, seventeen of these infants having entered the world head first. He admits, however, that it is impossible to deny the special proneness of the accident to occur in breech presentations.

"The occasional connection," he says, "between torticollis and congenital sterno-mastoid tumour is certainly sufficiently well established to warrant the medical attendant in warning the parents about it, in order that, if it should occur, it may be noticed early, and that suitable treatment may be adopted before the deformity is marked, and before the development of the affected side of the head is interfered with."

The sooner the medical attendant undertakes gentle treatment with regard to the prevention of the occurrence of wry-neck the better. Frictions, manipulations and stretchings, if persistently carried out by an intelligent nurse or mother, will effectually ward off future trouble. Because the swelling is simple and inconspicuous it must not be left without attention. Pollard concludes as follows:—

"Mr. Clutton, Mr. Edmund Owen, Mr. Raymond Johnson, and Mr. D'Arcy Power have observed cases in which congenital tumours of the sterno-mastoid muscle have been followed by torticollis, and the last-named surgeon has collected thirty cases (Mr. Clutton's, Mr. Willett's, and his own) which were followed up. Eleven had wry-neck; in two of the cases it was extremely slight, but in four it was so marked as to necessitate division of the tendon. Mr. Power has also collected from English and foreign literature 106 cases of congenital hæmatoma, and finds that wry-neck occurred in at least twenty-one of them. In two cases of well-marked torticollis upon which he operated last year there was a clear history of the affected muscle having been the seat of a hard swelling, which gradually disappeared in the first few months of life."

Mikulicz (*Centralb. für Chir.*, 1895) is not satisfied with

either the subcutaneous or the open division of the contracted muscle in wry-neck, but proposes to resect it entirely, from sternum and clavicle to occiput. He offers a caution against wounding the internal jugular vein and the spinal accessory nerve. After reading Stiles's paper (p. 240), it is refreshing to find that the large jugular is still looked upon and treated with respect, though I confess that this expression of consideration is somewhat surprising as coming from a surgeon who thinks it advisable to take away the whole sterno-mastoid on account of its being somewhat shortened. In less than four years Mikulicz had treated seventeen cases of congenital wry-neck by extirpation of the muscle. He regrets, however, that his operation has the disadvantage of leaving a certain "weakness" in the region. I would venture to condemn the operation altogether as being perfectly unnecessary, the simple division of the muscle by open wound leaving nothing to be desired, even in the very worst cases, provided that massage and drillings are subsequently carried out with patience and intelligence.

3. Hernia of the ovary in infants with torsion of the pedicle.

Two cases of this extraordinary affection have been published in 1896, one by Lockwood in the *Brit. Med. Journ.*, June 13, and the other by Owen in the *Lancet*, March 21.

Lockwood's case (Fig. 1) was that of a fat and healthy baby six months old. On July 27 she refused the breast, was sick, and drew up her legs as if in pain. She was sick again on July 28, and next day her mother noticed for the first time a tender swelling in her right inguinal region. On July 30 the skin over it was red, and the child was brought to the hospital. In the right inguinal region she had an oval swelling about 3 inches long and $1\frac{1}{2}$ inch wide. Its upper end was at the internal abdominal ring; its lower end was lost in the right labium majus. The skin over the swelling was inflamed. The swelling was tense and had no impulse. The local characters were those of an inflamed and strangulated inguinal hernia. This idea was supported by a history of constipation since July 28, and of occasional vomiting, but after admission into the hospital flatus was passed, and a rectal examination was followed by a copious action of the bowels. This suggested that an operation was not urgently needed. On August 2, chloroform having been given, an incision along the course of the inguinal canal exposed a bluish-red cyst with walls nearly an eighth of an inch thick. It was distended with about two drachms of dark brown, grumous fluid. When the sac was opened an ovoid mass, like a small damson, came into

view, and the deeply engorged, fimbriated end of the Fallopian tube was found peeping from beneath the lower part of this mass, which was now recognised to be an ovary full of blood. The ovary, Fallopian tube, and broad ligament lay free in the sac. About three-quarters of an inch from the internal abdominal ring their pedicle had made a half turn upon itself. This half turn was the cause of the vascular engorgement of the ovary, Fallopian tube, and broad ligament, because the part of the tube between the half twist and the internal abdominal ring was normal. Moreover, the internal abdominal ring was capacious, and seemed incapable of constricting its contents. When the

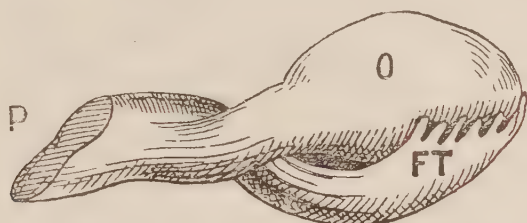


Fig. 1.—Case of Mr. Lockwood's Twisted ovarian pedicle (semi-diagrammatic).
FT, Fallopian tube; O, ovary; P, pedicle.

ovary was pulled out of the sac the half turn disappeared. The ovary and tube were too much damaged to be returned into the abdomen. Therefore they were removed after the pedicle had been transtixed and tied. The sac was afterwards excised. The child made an uninterrupted recovery. There was nothing to show why the ovary had descended in this way, or how the Fallopian tube had got beneath it. But the end of the broad ligament in which they lay was quite loose within the hernial sac, so that considerable mobility must have been allowed.

Owen's case (Fig. 2) was that of an infant of eleven weeks who was admitted into the Children's Hospital on January 28, on account of a hard and tender swelling in the right labium majus. She had been perfectly well until two days previously, when she had vomited twice or thrice after taking food. On the 27th she was irritable and vomited on several occasions, and the mother discovered a painful swelling in the groin, which gradually increased in size and tenderness. The infant had not been constipated; the vomit was said to be bile-stained. When admitted, the infant appeared in good health. The facial expression was peaceful. A tense swelling was present in the right labium majus, and it continued up the inguinal canal as a firm cord-like prolongation. The tumour was rather tender. It was irreducible, dull to percussion, and devoid of impulse when the

child cried. The abdomen was quite flaccid and moved freely with respiration. As the infant's general condition was perfectly satisfactory, it was thought that operation might well be deferred until the next morning. During the night the child vomited several times and there was a slight diarrhœa. On the morning of the 29th chloroform was administered, and an incision was made down to the swelling, setting free about two drachms of blood-stained fluid which surrounded a very deeply congested and lobulated swelling in a hernial sac. This swelling, of



Fig. 2.—Mr. Owen's case of Twisted pedicle and engorged ovary, with cedematous fimbriæ of Fallopian tube. (Drawn after the specimen had been lying in spirits.)

about the size of a large peach-stone, proved to be an engorged ovary. The pedicle, formed from the broad ligament containing the Fallopian tube and ovarian vessels, was twisted near the ovary, in a direction opposite to that of a screw. From the twist the pedicle extended to the uterus, a small part of which was dragged into and was protruding through the internal abdominal ring. The pedicle was ligated and divided just above the twist, the ovary being removed. The child made a rapid recovery.

These reports are specially interesting in that they bear a close resemblance to those cases of torsion of the spermatic cord which were reported in the *Lancet* of November 18, 1893. It has fallen to the lot of most surgeons who have experience with abdominal surgery to find an ovarian tumour twisted on its pedicle and in a condition of potential gangrene, and it is not a very extraordinary thing that an ovary which has entered the inguinal canal should get its pedicle twisted. Still, I believe that such cases are quite rare, though ovarian herniæ are often met with in childhood.

Whilst discussing the subject of hernia in childhood, **Raymond Johnson** (*Clin. Journ.*, September, 1896) remarks:—"In rare instances strangulation of an ovarian hernia has been met with, but it is highly probable that some of the cases regarded as of this nature were rather examples of torsion of the ovarian pedicle, a

condition which has recently been met with by Mr. Lockwood and Mr. Owen. This remarkable accident, followed as it is by swelling and hæmorrhage into the ovary, is evidently closely allied to the sudden torsion of the spermatic cord of an imperfectly descended testis in the opposite sex."

4. Lumbar puncture of the theca vertebralis.

The Editor of *Archives of Pediatrics*, April, 1896, remarks concerning lumbar puncture, that though Quinke introduced the operation with the view of securing therapeutic results, they were not obtained, but that the operation is likely to remain as a method of diagnosis; that the most important and positive result to be obtained from lumbar puncture is the determination of the presence of pus, blood or bacilli, in the subdural space. Wolfstein, who himself had experience of the method, writes (*ibid.*, March, 1896) that after puncture for the relief of hydrocephalus reaccumulation rapidly takes place, so that frequent punctures are necessary, "until finally the method becomes useless."

A. L. Gaibissi (*Gazz. degli Ospedali*, February 22, 1896) comments upon the suggestive period of silence that followed the communication of Quinke's paper at the Wiesbaden Congress of 1891, but agrees with Fraenkel, Lichtheim and others concerning its diagnostic value. Gaibissi assures us that the puncture may be adopted with no more harm or risk than that which follows the puncture of any other cavity of the body.

George W. Jacoby (*New York Med. Journ.*, January 4, 1896), when about to speak of the diagnostic value of the puncture from an experience of thirty-five cases operated upon, says: "It is a great relief now to turn from the negative results obtained therapeutically by this method" to discuss its value as a diagnostic agent. For rough estimation, he says, normally the fluid comes out by the puncture-wound drop by drop, whilst with brain tumour "it at first spurts out and then flows in a steady stream." Jacoby then briefly describes a case of tuberculous meningitis (which went the way of all its fellows), and says that it had taken several hours' search on the part of an expert microscopist to find a very few bacilli in the fluid drawn off by puncture.

After reading Jacoby's able essay I cannot think that lumbar puncture has (as they say in America) "come to stay." It has already had a terrible fall from the firmament of therapeutics, and though it may be allowed to occupy, for a time, at any rate, a humble place amongst "diagnostic procedures," I do not believe that we shall henceforward often hear of it.

5. Deformity after excision of the knee in childhood.

At the Congress of Surgery held in Paris at the end of October, 1895, Gross, of Nancy (*Sem. Méd.*), instanced two cases in which progressive flexion had followed resection of tuberculous knees, and remarked that such secondary deformity was just as likely to follow mere arthrectomy. In discussing the causes of the defect he gave, first and foremost, the neglect of sufficiently prolonged use of retentive apparatus, and the too hasty resort to free use of the limb. For this, I think, the blame must not always be cast entirely upon the parents; the after-treatment of these cases is too often permitted to be carried on with half-heartedness or even neglect. For the first few months, as the child is going about with the limb (for preference) in a Thomas's splint, the surgeon watches it, and satisfies himself that all the tuberculous tissue has been cleared away, the part remaining cool and free of pain and swelling, and the child's aspect being greatly improved. After this comes the constant wearying of the parents—"Will it hurt the child to get about a little without the splint?" The mother is very troublesome in this matter, and "by her continual coming" she wearies the surgeon, who, like the unjust judge, at last gives way. The union between the tibia and femur slowly and almost imperceptibly yields. The surgeon loses sight of the child, and when eventually it is again brought to him, the knee is bent almost to a right angle and solidly fixed. In one of my cases the deformity was, however, in the opposite direction to that generally met with, the salient angle being posteriorly, as in a bird's limb; and sometimes the deformity is lateral, of a valgus or varus nature. What the surgeon has constantly to bear in mind is that, because the child may be a proper subject for enthusiastic exhibition before a Medical Society soon after the performance of a resection or of an arthrectomy, it by no means follows that union is solid, but that it must take very many months, perhaps years, before the old tuberculous knee can be trusted for walking.

There are several ways of dealing with secondary deformity. First, if the uniting medium be not firm, it may gradually give way to appropriate bandaging in a Thomas's splint; or, if too firm for this, the original wound may be opened up and the uniting material cut through; or, lastly, if the bones be solidly fused together, a wedge-shaped piece may be removed from femur or tibia, or from both bones, the line of the epiphysial junction being avoided in the section. Each method of procedure, in appropriate circumstances, gives good results, and the prolonged

and careful supervision to which the child is afterwards subjected ensures him against further relapse.

6. Intussusception.

Intussusception must, until its treatment is definitely formulated and approved, be one of the most interesting subjects for discussion in connection with the surgery of childhood. For it is of common occurrence in the first two years of life; it is sooner or later met with by every man in general practice; it is well-nigh certain to be correctly diagnosed; and, worst of all, if the old-fashioned methods of dealing with it be followed, death is almost sure to occur. But on the other hand? Well, one is bound to admit that, at present, operative measures have no great claim to urge, so far as statistics and clinical experience can be taken as evidence. By "operative measures," let it be clearly understood, I do not mean distension of the lower bowel by air or liquid, but abdominal section. Now, as the expression "abdominal section" may, in the circumstances, appear to some practitioners harsh and ill-sounding, I will present the matter somewhat differently. Here, then, as a clinical illustration, is an infant of ten months who is suddenly taken with a screaming fit; it is evidently in great distress, for it refuses food and will not be comforted. It shows by unmistakable signs that the seat of pain is in the belly; possibly it vomits, though by no means necessarily so. Its belly is not distended, and, maybe, an obscure and tender swelling is found in the right iliac or lumbar region. The infant makes spasmodic and distressing efforts at defecation, and, most characteristic of all, blood-stained mucus is found upon the napkins or in the chamber-vessel. In his mind's eye the practitioner sees a certain amount of invagination in the neighbourhood of the ileo-cæcal valve, with the mucous lining of the bowel strangled, swollen, and bleeding, and the opposed layers of the peritoneal coat already glueing themselves together with plastic exudation. The case is extremely urgent. Every hour, every minute, indeed, is of the utmost importance, for the swelling is increasing, and the peritoneal exudation is becoming rapidly organised. Surely the right thing to do is to make a two-inch incision into the peritoneal cavity forthwith, to reduce the intussusception whilst this can yet be done, and thus to set the parts and the child at rest. Speaking as an operating surgeon, I would say that I meet with no more distressing cases than these; for by the time that I see them "everything" has been tried; the child is collapsed—harmed by the delay, if not by the treatment fruitlessly undertaken; and the cutting operation comes as the final scene. No wonder that operative treatment

in these cases has a bad record. It has not yet had a fair chance.

Frederick Holme Wiggin, M.D., read an important paper on the subject of infantile intussusception at a meeting of the New York Academy of Medicine, January 2, 1896, in which he gave a study of 103 cases which had been treated either by intestinal distension or laparotomy. Of these, 50 per cent. occurred during the fourth, fifth, or sixth month. Wiggin digests and fairly argues out the reports of these cases, and concludes with the following remarks, to which I have much pleasure in directing attention:—"If the general profession and the laity could be impressed with the facts that acute intussusception is in reality a form of strangulated hernia; that the subacute variety is frequently an irreducible hernia; that enemata are far from being devoid of danger in their administration; that abdominal section performed under modern conditions and during the first forty-eight hours of the disorder has a chance of success represented by 78 per cent. (which would speedily rise to 90 per cent. as the cases came more frequently under operation during the first twenty-four hours), it would not be long before we should come to look upon the treatment of this disease by enemata of air and water much as we do to-day upon the pukes, purges, doses of metallic mercury, of gold and silver balls, of mixtures of birdshot and olive oil, and blood-letting, which were soberly employed by good men not so many years ago for the relief of this distressing disorder, made more painful by reason of the heroic treatment considered necessary for its relief.

"With the light turned fully on what modern surgery has already accomplished in this direction, it is a safe prediction that before the dawn of the twentieth century it will be generally acknowledged that our science has fully triumphed over another of her malignant foes—infantile intussusception."

In the *Australian Med. Gazette* (September 20, 1895) Clubbe reported seven cases of intussusception in very young children which he had treated by laparotomy. The first was an infant of six months. An injection of warm oil made the tumour disappear, but, as so often happens in the treatment by injection, though the intussusception disappeared, it was not actually reduced. In subsequently dealing with the intussusception by the fingers "the serous coat of the bowel was torn in two or three places." The child recovered. The second case was an infant of four months, but death followed in eleven hours; the third infant recovered; the fourth died; the fifth and sixth recovered, and the seventh died. Surely this is, in the circum-

stances, a very cheering report, and one of which any surgeon might be proud. Clubbe's opinion is that the operation should "certainly be done in all cases, no matter how young the child is, if we are certain that we have an intussusception that has not been reduced by the rectal injections." Whilst congratulating Dr. Clubbe, I venture to alter this conclusion by saying that even if we are not "cock-sure" of there being an intussusception, we shall do well to explore by incision, and that we shall probably obtain better results if we altogether discard the treatment by rectal injections. Looking through his paper, he certainly appears to have no reason for speaking favourably of injections.

Rydygier, of Cracow (*Verhandlungen der deutsch. Gesellsch. für Chir.*, p. 1895, 433), laid a valuable communication upon this subject before the German Surgical Congress last year based upon several cases which had been under his care or in his cognisance. He grieved over the delay which generally occurred before the surgeon's aid is called in. The diagnosis, he said, was easily made, but the decision as to the proper time of operating was not so easily settled. He separated the cases of acute invagination from those of the chronic variety, and showed that in the former class the percentage of deaths was 73·8. He reminds us that the energetic adoption of the inflation method is groping in the dark, and not without danger. In those cases in which, after laparotomy, invagination could not be performed, resection of the included bowel should be resorted to.

7. Acute inflammation of the caecal appendix.

The fact of this disease being of such frequent occurrence in childhood is said to be due to the fact that the appendix is rich in lymphoid material akin to that of the tonsils—an unstable tissue which is very liable to bacillary infection and disturbance. Cases of the disease are constantly under observation, both in private and in hospital work, but though the pathology, symptoms, and treatment of the inflammation are much better understood than was the case only a few short years ago, still the indications as to the time when active surgical intervention should be resorted to are by no means clearly formulated. This is partly due to the fact that no two cases are exactly alike. If in every case a localised abscess formed in front of the appendix, the rule would be, of course, that the shiver and the local tenderness suffice in every case to indicate the making of an incision through the abdominal wall. But not in every case does pus form; and, on the other hand, in a large proportion of cases in which it does form, the abscess is at the back of the cæcum, and to reach it the matted coils of intestine would have to be so much disturbed that

the operation is dangerous in that it invites the spread of the septic inflammation to the general peritoneal cavity.

Dieulafoy's communication upon the subject before the Academy of Medicine at Paris, March 10, 1896, has attracted a large amount of attention amongst French surgeons, and has proved a valuable contribution to the literature of the subject. He said that it is now well established that it is to inflammation of the appendix and not of the cæcum that we must henceforth refer the symptoms which formerly constituted the diseases of typhlitis and perityphlitis. Indeed, in the surgery of childhood the terms "typhlitis" and "perityphlitis" have now become obsolete. Thus we have got rid of two affections which we really did not understand, and have taken in their stead an acute and perilous, but a definite and intelligible pathological entity which must be treated with discretion always and with vigour often.

Dieulafoy ends his paper with the expression of his full conviction as regards treatment, which he gives bluntly and in italics. I do not quite like to translate it, lest, in bald, uncompromising English, it should by chance shock some of my friends who practise the gentler art:—*Il n'existe pas de traitement médical de l'appendicite.*

I went a little way in this direction when in a recent "Year-Book of Treatment" I wrote that every case of intestinal obstruction coming to a hospital should, as a matter of course, be sent into a surgical ward; but, whatever my opinion concerning the treatment of acute inflammation of the appendix may be, I should lack courage, I fear, here to express it as strongly as Dieulafoy has done!

In the hearts of those who still urge medical rather than surgical treatment in appendicular inflammation, Dieulafoy would like, he says, to engrave this sentence: "One never regrets having operated on such a case, but one often regrets not having operated, or having done so too late."

Delore contributed an interesting paper to the *Lyon Médical* (May 24, 1896) on the case of a healthy little boy who had a gaseous abscess in connection with the vermiform process which followed a kick in the belly. He had fulness and persistent pain in the right iliac fossa, shivers and a high temperature. Fomentations, leeches and ice—as so often happens in these cases—were tried and found wanting. As soon as the peritoneum was incised there was an escape of pus, together with a putrid (not fæculent) gas. Delore explored the parts "with extreme prudence" and found an extensive cavity which reached even into the pelvis. A drain was inserted, but no irrigation was resorted to.

The after-history of the case shows that his scalpel acted like the wand of a magician ; the temperature dropped to normal, the boy slept all night, his aspect had so improved that he was scarcely recognisable, and he made a perfect recovery.

Delore does well to commend the prudence with which he dealt with this localised peritoneal abscess, for there is a great risk of doing too much in these cases. After the abscess has been incised, a meddling interference or inquisitive inspection is likely to break down the tender adhesions which are shutting off the putrid area, and thus give rise to a general septic peritonitis. If the surgeon do not stumble across the gangrenous or inflamed appendix he must exercise self-denial and not search for it. It is easy to spoil these cases by officiousness. No attempt should be made to squeeze out the pus : it must be allowed quietly to well up into the absorbent dressings. Nor must a stiff drainage-tube be introduced. If a drain is thought to be necessary it should be a strip or two of gauze, a spill of indiarubber tissue, or a very soft tube.

The fact of the gas in his case not having a fæcal odour led Delore to the speculation that there was probably no opening into the bowel, but that the gas had been produced by streptococci which had found their way into the loose tissue near the damaged bowel. He had delayed operation for some time because the boy's temperature was not markedly high, but he rightly remarks that the presence of certain toxins in pus may prevent the temperature from greatly rising, and such products, he states, are especially apt to be met with in connection with appendicular suppuration. As we all know, the temperature has to be considered in conjunction with other indications ; but anxious parents, nurses, and not a few young practitioners, seem to regard the thermometric chart as the one, almost the only, trustworthy index of the child's physical condition. Sometimes, indeed, in private practice, I forbid a child's temperature being taken, well knowing that, in my absence, the entire household is apt to be upset by an unfavourable change in its reading.

There is an art in taking a temperature, and not everyone, not even every nurse, has acquired it.

Gifford Nash (*Lancet*, vol. ii., 1895) has instanced two curious examples of error which resulted from the thermometer being put into the mouth shortly after the patient had taken hot food.

Le Dentu, whose remarks on Dieulafoy's paper are referred to below, says that one cannot shout it out too loud that there is nothing so deceptive as septic peritonitis ; that nearly all the signs of a general peritonitis—temperature amongst them—may be absent.

Laveran (*Bull. de l'Acad. de Méd.*, May 5, 1895) traversed an important statement made by Dieulafoy, that inflammation of the appendix was always the result of its being shut off from communication with the cæcum. He would add as other causes vicious position of the appendix, and kinking. He evidently shares the anxiety felt by almost every surgeon when he says that the great difficulty of treatment is to know exactly when to operate.

The question as to when incision should be resorted to is, indeed, difficult of settlement. If too early, as Delore says, there may be no pus, and the introduction of a drain may be of no use; if too late, the chances of fatal septicæmia are overwhelming. But, says he, it is better to be too early than too late. Indeed, he ends his excellent paper with the old adage, "*Le mouvement, c'est la vie ; le repos, c'est la mort.*" This is somewhat theatrical, maybe, but it shows in what direction we shall probably have to look for the answer to the question, "When should the incision be made over the child's inflamed appendix?"

Le Dentu, discussing Dieulafoy's paper, truly remarked that all cases of inflammation of the appendix did not demand operation, but that one must not go to sleep over them; and he urged the physician to be prompt in calling the surgeon into consultation. He also admitted that it was very difficult to know just when to operate, but he cited a case in which merely cutting down on to the inflamed tissues gave immediate relief, although there was no pus.

DISEASES OF THE GENITO-URINARY SYSTEM.

BY REGINALD HARRISON, F.R.C.S.,

Surgeon to St. Peter's Hospital.

1. Kidney colic in young children.

A brief reference may first be made to a paper by R. A. Gibbons on this subject (*Royal Med. Chir. Trans.*, vol. lxxix.). Though written mainly from a physician's point of view, the communication is one that the surgeon will do well to note in connection with the possible application of nephrolithotomy to this condition in such young children. The paper is stated to be the first of its kind brought before the Society, a circumstance which is probably due, as the author suggests, to the fact that, although such cases are undoubtedly rare, they have been mistaken for instances of intestinal colic, which are not uncommon.

2. Resection of portion of a kidney.

O. Bloch, of Copenhagen (*Brit. Med. Journ.*, October 17, 1896), records a case in which this was practised in a youth aged seventeen, for a tumour pronounced by the author to be an adenoma, with various degenerative processes from bleeding into the tissue, which occupied the lower half of the organ. The patient made a good recovery, and nine months after the operation was reported as well. The paper is illustrated to show the extent of the disease and the mode in which a stump was formed by suturing the remaining portion of the organ believed to be in a sound state. Brief notes of ten other cases where various degrees of resection were practised without removing the entire organ are appended. The author urges the importance of endeavouring to save as much healthy kidney tissue as possible in view of the difficulty connected with accurately determining the degree and extent of soundness of the opposite organ.

The decision as to whether the whole or part of a kidney is to be extirpated turns much upon the same principle as the surgeon applies in the case of tumours of the extremities involving bones or joints. If on examination or exploration the growth is found to be malignant, then the entire part or bone, as the case may be, should be removed so as to offer the best chance of breaking what

may be spoken of as the continuity of infection. In this way a better chance of freedom from recurrence is undoubtedly afforded. Partial operations in cases of malignancy are not to be recommended, and the possibility of recurrence is more to be dreaded under these circumstances, in cases in any sense fitted for operation, than the possibility of insufficiency in secreting power in the opposite organ. In traumatism of the kidney attended with hæmorrhage, and in non-malignant tumefactions, Bloch's case may serve as a useful guide for treatment.

3. Nephro-ureterectomy.

H. A. Kelly records (*Johns Hopkins Hospital Bull.*, Nos. 59, 60, 1896) a case where the left kidney and its ureter were extirpated for cystic and tuberculous disease by a long incision outside and parallel to the semilunar line. The muscles were divided, the peritoneum opened, and the viscera displaced to the opposite side, the posterior peritoneum cut through on the outer side of the colon, which was further displaced to the right, so as to expose the enlarged and thickened ureter lying on the psoas muscle. The ureter was then traced up to the kidney, which was enucleated. After the vessels of the latter had been tied it was detached, and, together with its ureter, lifted out of its bed, the ureter being divided 4 c.m. below the pelvic brim. A gauze drain through the loin was provided, and the long abdominal incision closed with silkworm-gut sutures. An attempt was subsequently made to remove the lower or bladder end of the ureter by an incision through the vagina, but this was found impracticable. The patient recovered completely, with the exception of some frequency in micturition.

This case illustrates a proceeding which may advantageously be adopted in those instances, usually of a tuberculous character, where it is necessary to remove both the gland and the duct. By preserving the continuity of the parts the steps of the operation are much facilitated and a more complete extirpation may be effected. The ureter is frequently the seat of active tuberculous disease concurrently with unilateral infection of the corresponding kidney, and in more than one instance I have seen after death, where a nephrectomy failed, it was in a measure due to extensive disorganisation of the duct, which had been left behind. Tubercle, like cancer, must be removed completely if any permanent good, or even temporary relief of a sufficient character, is to be effected.

4. Rupture of the kidney.

Keen (*Annals of Surg.*, August, 1896) discusses the treatment of this lesion. He points out that the slighter cases of this

kind, which form the majority, recover, whilst the more serious ones, if left alone, terminate fatally, either from immediate or secondary hæmorrhage, or from sepsis. He therefore urges that the principles of surgery which are applicable to wounds generally should be resorted to without delay in kidney lesions where the symptoms of hæmorrhage or sepsis are threatening. Nor, as Keen points out, should we entirely rely on the absence of visible signs of hæmorrhage. Some of the most serious bleedings in connection with lesions of the kidney take place into the peritoneum and adjacent connective tissue. Tumefaction in the neighbourhood of the kidney, intestinal distension, or abdominal tension of a pressing character, in conjunction with other evidences pointing to a lesion of this kind, warrant resort to an exploratory operation without delay.

I have recorded a very striking example of the risk caused by delay. It occurred in 1883 in the earlier days of renal surgery ("Surgical Disorders of the Urinary Organs," Fourth Edition, p. 366). It was that of a boy who had continuous hæmorrhage after an injury to his loin. Nephrectomy was performed on the seventeenth day, when the kidney was found torn across. Though the hæmorrhage ceased after this, cystitis continued, which, on opening the bladder, was found to be due to a mass of decomposed blood-clots. The patient died some days afterwards, *post-mortem* examination showing that the remaining organ was in an advanced stage of what is commonly called surgical kidney. There can be no doubt that if an earlier nephrectomy had been practised, the fatal complications, by means of which the other kidney became involved, would have been averted. I saw the case in conjunction with Dr. Rawdon, of Liverpool. I have briefly narrated these particulars as the best commentary I can offer on Keen's most practical and most judicial paper, which should be studied by all who are called on to treat injuries of the kidney.

5. Reni-puncture in albuminuria.

In an article (*Lancet*, January 4, 1896), and in his presidential address to the Medical Society of London (*Brit. Med. Journ.*, October 17, 1896), Reginald Harrison draws attention (1) to certain cases of albuminuria relative to kidney tension, and (2) to the treatment of some forms of albuminuria by what is called reni-puncture. These papers were both based upon some cases of exploration of the kidney, either by incision or by puncture, where, although albumin was present in the urine at the time, the operations were undertaken with other objects in view. In three cases recorded by Harrison, two by

Newman (*Trans. Clin. Society*, January, 1896), and one by Hoeber, of Homburg, it was shown that the disappearance of albumin from the urine seemed to have followed the operation performed in every instance. From these examples it is argued, in the first paper, that inflammatory tension is, in cases of acute nephritis, a frequent cause of albuminuria; and, in the second, that in the recorded instances the relief of tension by surgical means directly applied to the engorged kidneys explained the disappearance of albuminuria. It was suggested that these views might possibly be extended in explanation of some points connected with the pathology of albuminuria, and also in the treatment of some forms of this affection.

6. The treatment of large calculi in the bladder.

P. J. Freyer (*Brit. Med. Journ.*, November 7, 1896) discusses this aspect of the question in a paper based on an extensive experience in calculous disorders in India. For this purpose he furnished particulars of forty-nine operations where the calculi weighed 2 ounces and upwards, the largest example amounting to $12\frac{1}{2}$ ounces. Of these forty-nine operations, four were by suprapubic lithotomy, fourteen by perineal lithotomy, and thirty-one by litholapaxy. The average age of the litholapaxy cases was fifty-two years, ten years greater than that of the perineal lithotomy cases, and double that of the suprapubic cases. The average weight of stone in the suprapubic cases was, however, twice that of the other two varieties of operation, but the period under treatment after operation in the litholapaxy cases was only ten days as compared with thirty and thirty-four days respectively in the lithotomy cases. Finally, the mortality, which in the suprapubic operation was 50 per cent., and in the perineal 28 per cent., was in the litholapaxy cases reduced to less than 10 per cent. Freyer observes "that a glance at the column of results in the first tabular statement will show that in proportion as I abandoned lithotomy in my practice in favour of litholapaxy, and as I gained experience of this latter operation, my results improved; and the fact that my last sixteen litholapaxies for calculi of from 2 up to $6\frac{1}{8}$ ounces were one and all successful shows what splendid results we may obtain from Bigelow's operation."

Incidentally, in the course of his remarks, the author referred to various matters in connection with diagnosis and treatment upon which stress was laid. Amongst these may be mentioned: the employment of the water test by means of the aspirator-catheter and wash-bottle, not only for detecting the last fragment

of *débris*, but as an aid in diagnosis generally, in cases presenting doubt as to whether a calculus was present in the bladder; the mode of reducing the diameter of large calculi by chipping at them as a preliminary, so as to bring them within the grip of the lithotrite; and the altering of the axis of the calculus, relatively to the outlet of the bladder, in some instances for the better and more convenient use of the lithotrite for crushing purposes. These and other points added to the value of a paper that was purposely limited to the discussion of one aspect of a large and important subject.

7. The treatment of prostatic hypertrophy.

This subject occupied a prominent position in the surgical section of the British Medical Association (*B. M. Journ.*, October 10, 1896). **McEwan** of Dundee opened the discussion with an exhaustive paper, and drew the following conclusions, all of which bear upon the treatment of this affection: (1) That in a considerable proportion of cases castration induces more or less atrophy of the enlarged prostate, and that this atrophy is probably the result of the loss of a physiological substance formed by the testicle which is essential to the nutrition of the gland. (2) Atrophy occurs most readily in the soft and elastic forms of hypertrophy, but it may also take place in the hard, even when associated with general arterio-sclerosis. (3) That the best effect is obtained when there is general enlargement of the gland. Sessile enlargement of the median portion may yield to castration, but intravesical outgrowths are as a rule more suited for prostatectomy. (4) That cystitis, when not far advanced, may be relieved or cured. (5) That high grades of cystitis associated with septic infection of the kidneys, and with distressing bladder symptoms, will be more benefited by drainage of the bladder. (6) Vesical contractility may be restored even after years of complete catheterism. (7) Although voluntary power does not return, castration may still bring relief to the patient if catheterism has been frequent, painful and difficult. (8) With the exception mentioned, castration will give as good results as prostatectomy, with a smaller death-rate. (9) Resection of the vasa deferentia acts more slowly than castration in reducing hypertrophy of the prostate. (10) It is a simpler operation, would be more readily assented to by the patient, and could therefore be recommended earlier.

Cabot, of Boston, U.S.A. (*Annals of Surg.*, September, 1896), makes a contribution to this subject. In analysing the results of ninety-nine cases of castration for hypertrophy of the prostate, he states that in eleven of these mental disturbance immediately

followed the operation. Of these, a serious maniacal condition occurred in six cases, and in the remaining five there was considerable loss of mental balance with, in several, a melancholic tendency. Of the six maniacal patients, one had previously shown symptoms of mania. The attack was apparently precipitated by the operation. Reducing these ninety-nine cases of castration to figures, Cabot found that they show 9·8 per cent. of failure, 6·6 per cent. of moderate improvement, and 83·6 per cent. of substantial or very great improvement. Putting these figures into words for explaining to a patient in search of information relative to castration, he states "you have eight chances in ten of getting through the operation all right, and, if you are successful in this, you have again eight chances in ten, or a little better, of getting very substantial relief from your urinary difficulties."

Speaking of vasectomy, Cabot states that the number of cases is too small to draw any conclusion as to the mortality or degree of improvement which can be expected from this operation. On the other hand, **Pavone** (*Il Policlinico*, No. 15, 1896), in thirty-four cases where the vasa were excised, found that four died of other diseases, in two the results were negative, and in the remaining twenty-eight cure or improvement followed. Pavone lays stress on a point of some importance; the vas should not merely be tied, but a portion of it, say about an inch, should be resected and the divided ends twisted so as to secure complete occlusion. Unless this is done, it is quite possible when the ligature comes away that the continuity of the canal may be re-established. Failures have undoubtedly been caused by omission of this precaution, as illustrated by **B. Lewis** (*Journ. Cut. and Gen.-Urin. Diseases*, New York, August, 1896). Further, it is better that the vasa should be resected on two different occasions, with an interval of about a month between the operations. It sometimes happens, as Harrison pointed out in the discussion, that after one vas has been divided, the prostatic symptoms subside temporarily and then reappear coincidentally with some hypertrophy taking place in the testicle of the opposite side, which not infrequently follows. It is in these, and after the second vas has been divided, that he obtained the best results.

It seems, as matters at present stand, that, apart from other operations, there are, so far as the general relations between the prostate and testis are concerned, two courses open with possibilities as to cure or relief—namely, castration or division of the vasa deferentia. Both have been proved capable of bringing about similar results, so far as symptoms consequent on senile hypertrophy of the prostate are concerned. The circumstances under

which both fail to give adequate relief, or the conditions which render the one or the other preferable as being the more likely to lead to the best results, are problems that have yet to be solved. Further, it has to be determined where prostatectomy or less heroic methods of dealing with the enlarged prostate should be preferred. Having regard to the uncertainties connected with the results, physical and mental, both of castration and vasectomy, as well as the ordinary risks arising out of other operative measures that might be mentioned, I do not think a surgeon is wise, on his own responsibility, in advising a patient who admits that he is comfortable and contented with the aid a catheter affords, to adopt such expedients as those just referred to. On the other hand, if this is not the case and the use of the catheter is attended with symptoms or requirements that render life miserable and rest impossible, and assuming that the senile prostate which is the cause has not acquired either the shape or the structure of a fibrous tumour, and that it is not carcinomatous, then I believe that either a vasectomy or a castration may be resorted to with advantage. If vasectomy on a more extended experience turns out reasonably and equally efficient as compared with the removal of the testes, I can hardly imagine that either a surgeon or a patient will select anything else.

8. Rupture of the male urethra treated by external urethrotomy and suture.

Cabot (*Journ. Cut. and Gen.-Urin. Dis.*, New York, July, 1896) details the treatment he employs and the results obtained in five instances. His mode of proceeding consists in exposing, by incision or perineal section, the ruptured spot usually situated behind the scrotum and in the deep urethra. The edges of the lacerated canal are then sought for and brought together by catgut sutures, and the calibre of the restored canal is tested by the introduction of a catheter, which is retained for some days. The outer or superficial part of the wound is left open, so that in the case of any leakage, the urine is not confined within the tissues. In all the cases so treated the results appear to have been satisfactory. The patients were submitted to inspection for two or three years afterwards for the purpose of ascertaining their freedom from stricture; in one case only was a slight obstruction discoverable. The conclusions arrived at by the author are: (1) In every case of ruptured urethra, immediate perineal section with suture of the urethra should be practised. (2) By this procedure not only do we greatly lessen the danger of urine infiltration and abscess, but we also in a large proportion of cases may hope to prevent

the formation of close intractable strictures. (3) In the early operation the search for the posterior end of the urethra is much easier than in the later. The hæmorrhage from the artery of the bulb serves as a guide to that end of the canal.

Weir also reports (*New York Med. Record*, 1896, No. 19) two cases where a similar practice was adopted with somewhat different details, which are worthy of notice. In the first case the operation was performed on the fourth day; and in the second, thirteen hours after the injury. When the evidence points sufficiently distinctly, from hæmorrhage and swelling of the part with painful or difficult micturition, he advises that the canal should be exposed by perineal incision and the separated ends sewn together with silk or catgut. Drainage of the bladder should subsequently be carried out either by a catheter or a supra-pubic opening. He prefers Cathcart's or Dawbarn's method for the latter. When the urethra is completely torn across and the vesical end cannot be found, he recommends that the wound should be douched for some minutes with hot antiseptic fluid, when the canal will generally be recognised. Failing this, pressure with the hand over the bladder usually indicates by the escape of urine the position of the deep urethra.

Though reference has been made to the treatment of this injury in previous volumes of the "Year-Book," the matter is one of so much importance relatively to the immediate consequences connected with rupture of the urethra, and to the certainty of the formation of the worst kind of stricture, that all details relative to the prevention of these consequences should be considered as they arise. Cabot's provision against urine leakage by non-closure of the superficial wound, and Weir's expedient for urine drainage either by supra-pubic or urethral drainage, are accessories connected with the immediate suturing of the rupture of the first importance.

9. Urethral resection for stricture.

Eugene Fuller (*Journ. Cut. and Gen.-Urin. Diseases*, New York, September, 1896) illustrates successfully this method of treatment in two cases of long narrow stricture complicated with sinus and perineal induration where dilatation and other methods of treatment were useless. In one case the excised tissue included the bulbous urethra, an inch of the penile urethra in front of the bulb, and the anterior half inch of the membranous urethra. In the second case an inch and three-quarters of the deep urethra was removed. The mode of draining is thus described: After the resection had been accomplished a low cut dividing the deepest portion of the membranous urethra, the lowest portion of

the perineal structures and some of the circular fibres of the sphincter ani was made. Along this low-level route a large-sized soft rubber vesical drainage-tube was placed. A soft catheter was then introduced along the urethra through the resected portion down to the larger tube, and the perineal structures were carefully sutured around it. This tube may be kept in for a week or ten days. The large perineal tube can be withdrawn and replaced as often as necessary without in the least disturbing the urethral tube.

Though the resection of strictures has been referred to in previous volumes of the "Year-Book," this is a modification which may be resorted to in some of those extensive cicatricial varieties that are occasionally met with. The mode of arranging the drainage-tubes seems well adapted to secure speedy union of the parts, and at the same time the maintenance of a sufficient calibre in the newly-formed canal.

10. The sterilisation of the urethra and catheters.

Groslik (*Cent. für Chir.*, 1896, and *Amer. Journ. Med. Sciences*, October, 1896) states that the mechanical methods usually adopted for sterilising catheters are inadequate. Complete sterilisation can be obtained by the action of hot air at a temperature of 130° C. for one hour, or under steam pressure for fifteen minutes. Metal catheters may be sterilised in boiling water. For disinfecting the urethra with the object of freeing it from bacteria, it is recommended that sterilised water should be injected, care being taken to make the outflow easy, so that the water will not enter the bladder. The posterior urethra can be disinfected only in conjunction with the disinfection of the bladder.

In the case of metal instruments I believe that sterilisation by heat is the best and only reliable method of dealing with them. Soft instruments may be kept clean by saturated solutions of boracic acid, but I very much doubt whether this is sufficient to sterilise them. For sterilising the urethra against various kinds of infection of a surgical nature—for instance, those incurred in the passage of instruments along the urethra into the bladder—of which some time ago we heard so much in connection with what was called "catheter fever," I agree with Groslik in concluding that this can be done only in conjunction with the bladder. Janet's recent researches (*Journ. des Malad. Gén.-Urin.*, Paris, 1895) relative to urinary infections have added importantly to our knowledge and practice in reference to the subject. The best way of efficiently disinfecting the urethra is by letting the bladder act the part of the syringe. In

cases where the latter is not atonic, and where there is some degree of risk that the use of a catheter may be followed by rigors and fever, these consequences may be averted by filling the bladder with a solution of permanganate of potash (one teaspoonful of the solution known as Condyl's fluid in a pint of warm water) before removing the catheter. Then the catheter may be removed and the patient required to void the solution from the bladder as in the ordinary act of micturition. In this way the deep and superficial urethra are most efficiently flushed. Similarly I have used a 1 per 2,000 solution of nitrate of silver in some forms of chronic cystitis proceeding probably from urethral infection. It is important to remember that the most serious infections are those derived, either surgically or otherwise, from the urethra, and that it is directly from the urethra, and not from the bladder, that their absorption into the system usually takes place. Hence the importance of studying the most efficient means, as Groslik urges, of sterilising this canal.

11. The Röntgen Rays relative to the surgery of the urinary organs.

D'Arsonval (*Bull. de l'Acad. de Méd.*, Paris, June 2, 1896, and *Clin. Journ.*, September 23, 1896) draws attention to the advantages that may arise from this method of investigation in the diagnosis and treatment of urinary calculi. From the photographs which were presented with this paper, it appears not unlikely that this may eventually prove to be the case. In the meantime we must await the result of further experiments and demonstrations before practical conclusions can be arrived at.

DISEASES OF THE RECTUM.

BY ALFRED COOPER, F.R.C.S.,

Senior Surgeon, St. Mark's Hospital.

1. The objects and limits of operations for cancer.

In his Lettsomian Lectures (*Brit. Med. Journ.*, 1896, vol. i., p. 581), **Watson Cheyne** alluded to the resources of surgery in dealing with cancer of the rectum. He pointed out that the conditions as regards cure were not so favourable as in several other parts, but that there were certain alternative procedures which did not aim at cure, but often prolonged life and greatly lessened the agony of the disease. In a large proportion of cases the hope of benefit from a radical operation is so very slight that we can exclude them from any such procedure, and at the same time help them much by colotomy—an operation which at the present time is attended with a very low rate of mortality. On the other hand, the mortality after excision varies from 5 to 20 per cent., the lower number representing the perineal and the higher the sacral operations. Statistics were cited to show that out of every hundred cases subjected to the radical operation in Germany (where such methods are more in favour than elsewhere), only about thirty-five are really likely to be benefited by the operation, whereas the remainder would be better off with colotomy. In the successful cases, where real benefit was derived from the operation, the disease was low down and was not adherent to the surrounding structures. Under opposite conditions, the tendency of the English school of surgery is to relieve the patient's sufferings by colotomy rather than perform an operation which offers no real prospect of cure or even marked prolongation of life.

2. The operative treatment of cancer of the rectum.

Cheyne's remarks on the formidable character of rectal operations practised on the Continent may appropriately be illustrated by the following descriptions. In the *Presse Méd.*, November 9, 1895, **Quenu** gives details of his operation for

the removal of twelve to fifteen centimetres of the intestine, with the anus, when the whole rectum is involved from the anus upwards. Iliac colotomy is the first step. Excision of the rectum is effected by making an incision in front of the anus and freeing the anterior surface of the bowel as high as possible. The incision is carried round the anus, and the part is then encircled by a strong silk ligature, well tightened. The patient is then placed on the right side, the right leg being extended, the left semiflexed. A T-shaped incision over the sacrum is next made down to the bone, the vertical part being median; the horizontal, from one third foramen to another. The coccyx is then freed from its surroundings, and this bone and the sacrum are divided in the middle line as far as the horizontal incision, which is extended through the sacrum with a chisel. In this way the posterior surface of the middle segment of the rectum is exposed. Below, the finger separates the tissues from the bowel until it reaches the anterior surface already cleared by the perineal incision. The levator ani is next divided on each side, and all the lower segment of the rectum is free. It is then raised from below upwards, and the peritoneum is separated by pressure with the finger or opened if necessary. In the latter case, the *cul-de-sac* must afterwards be fastened by sutures to the intestine. The middle hæmorrhoidal vessels are next cut between forceps. A silk ligature is then passed as high up the rectum as possible, tacking it in the wall of the bowel without penetrating the lumen. A second ligature is made to encircle the bowel close to the other, and the part between them is divided. In this way the whole rectum can be excised without the escape of a drop of its contents. The surface of the upper stump is touched with the thermo-cautery and fixed in the superior and lateral angle of the wound. The divided halves of the sacrum are fixed together by silk sutures passed in the periosteum; finally, sutures are applied to the skin.

Heidenhain (*Fortschritte d. Med.*, 1896, No. 2) recommends Rehn's modification of Kraske's method. The operation is preceded by inguinal colotomy, and the successive steps are then as follows:—Left parasacral incision, dividing the gluteus and ligaments close to the left side of the bone; excision of the coccyx; removal of the left edge of the sacrum, or temporary resection of that bone by a transverse incision below the third foramina, as the case may require. By this plan the survey of the field of operation, the separation of the diseased from healthy tissue, and the control of hæmorrhage are more easily effected than in the perineal operations, and not only the rectum but the sigmoid

flexure can be reached. The bowel is divided between two ligatures. An attempt may be made to draw down the upper segment to the anus and to fix it there with sutures.

3. The modern operative treatment of cancer of the rectum.

This subject is discussed at some length by A. G. Gerster, of New York, in the *Annals of Surg.*, October, 1895, p. 485. After alluding to the dangerous procedures devised by Dieffenbach, Lisfranc, and Velpeau, he describes the operation known as Kraske's, by which the affected region is rendered much more accessible. Its main and distinguishing feature is the excision of the left half of the lower portion of the sacrum up to the third sacral foramen. The separation of the rectum from the surrounding parts becomes a comparatively rapid, non-bloody, and safe process; and the dangers from uncontrollable hæmorrhage, and from accidental infection of the wound and peritoneum, are materially diminished. Gerster advocates a preliminary colotomy whenever the constriction prevents a thorough evacuation and cleansing of the bowel. It is very important to dislodge fæcal matter deposited and impacted above the stricture. The disadvantages of Kraske's procedure are the mutilation of the parts and the weakening of the pelvic floor which it necessarily causes. Various modifications have been devised, but most of them are open to objection. Gerster praises the plan devised by Rehn, of Frankfort (*Annals of Surg.*, 1890, vol. ii., p. 375). He makes an incision resembling the capital letter V, but with one leg crossing the entire width of the sacrum, while the other runs from the left end of this horizontal incision downwards and close along the left outer margin of the sacrum and coccyx. After the liberation of the left outer edge of the sacrum and coccyx these are separated by blunt dissection from the underlying rectum, and the sacrum is divided with a saw or chisel along the horizontal cut. The triangular osteo-integumental flap is turned out towards the right. Gerster also alludes to Rehn's method of removing rectal cancers in women. He makes a longitudinal median incision through the posterior vaginal wall, extending through the perineum to the margin of the sphincter. Hæmorrhage is said to be very slight and circular blunt liberation easy. The rectum is divided above the disease and between two ligatures, and the diseased part is then dissected away from its attachments. For further details reference must be made to Gerster's paper, towards the conclusion of which he alludes to the preservation of, or substitutes for, the function of the sphincter and to the remote sequelæ of the operation other than incontinence.

4. The value of the sacral method of operation in diseases of the rectum and other pelvic organs.

At the last annual meeting of the British Medical Association a paper on this subject was read by J. Campbell, of Belfast (*Brit. Med. Journ.*, 1896, vol. ii., p. 1007). He pointed out that in cancer of the rectum the sacral method has to compete with the old plan of excision on the one hand and with colotomy on the other, and preference was claimed for the more serious operation in a considerable number of cases. Colotomy is at best a palliative remedy when the disease is very extensive, and when serious obstruction exists; and excision by the old method should be reserved for cases in which the cancer is limited to the anus. For all other cases the sacral operation was claimed to be the best measure. Its advantages are as follow:—(1) It ensures the recognition of the limits of the disease, and enables us to get as far as possible beyond them; (2) it renders the complete control of hæmorrhage comparatively easy; (3) it affords access to the tissues between the rectum and the sacrum, and gives facilities for clearing away infiltrated glands and lymphatic vessels; (4) it leaves the sphincter and levator ani muscles uninjured in the majority of cases, and allows the patient to have considerable control over the action of the bowels. Its chief drawback is its greater severity; but this is more apparent than real, and is far outweighed by the substantial advantages which it possesses. The following is the method of performing the operation:—A curved incision, from the right sacro-iliac synchondrosis to the left ischio-rectal fossa, gives most freedom. The coccyx and—if necessary—the sacrum, as high as the third foramen, may be removed. There seems to be no real good in leaving the bones and replacing them. The sphincter and levator ani muscles should be spared if possible, and the ends of the bowel united to one another in front at least. When the ends cannot be easily united, it seems good to lay the anus open by a posterior median incision. The ends of the sphincter thus unite with the scar-tissue of the sacral wound, and the new anal aperture is in part surrounded by muscular fibres and somewhat under the patient's control. Close and elaborate stitching gives no permanent advantage, and should be avoided, only as many sutures as are needed to control bleeding and keep the bowel in place being used.

No mention is made of any debate upon the opinions advanced by the author of the paper, of which an abstract is given above. It may be well to repeat that the mortality attendant upon sacral operations is decidedly high as compared with the results of excision by the perineum. It would seem to be more in consonance

with surgical principles to select a less serious operation if the removal of the growth can be thereby satisfactorily effected, and experience shows that if the diseased portion extend to a height of less than three-and-a-half inches from the anus, the ordinary operation will suffice. When it extends to that distance, or somewhat above it, the choice lies between posterior proctectomy with removal of the coccyx and Kraske's method, or some modification thereof.

5. A very unfavourable opinion as to Kraske's operation has recently been expressed by J. M. Mathews, of Louisville, U.S.A. (*Mathews' Med. Quarterly*, April, 1896, p. 101). He questions the expediency of performing Kraske's operation in any case, and for the following reasons:—If the whole length of the rectum be involved in the malignant growth, extirpation will not be of any real avail. For the disease to have reached such a point, from three to five years must have elapsed, and during this interval adjacent structures will have become implicated. It must be remembered that the lower bowel is very freely supplied with blood, and that vascularity counts for much in the development and progress of malignant disease. The association of the part with lymphatic channels is also very marked, and the invasion and spread of the disease are thus accelerated. The close relation, by contiguity, with other organs renders total extirpation out of the question after serious invasion has taken place.

A still more adverse view is taken by C. Heath (Lecture on "Stricture of Rectum," *Clin. Journ.*, January 22, 1896, p. 202). He states emphatically that removal of cancer of the rectum by external operation is not advisable. He has done it and seen it done a great many times, but the results have been most unsatisfactory. If the whole rectum be removed there is much contraction, and the last stage is worse than the first, and colotomy becomes necessary. Moreover, the growth is often too far from the anus to admit of removal by the ordinary operation.

6. A criticism of Whitehead's operation for hæmorrhoids.

In *Mathews' Med. Quart.*, April, 1896, p. 101, the editor expresses doubt as to whether any improvement has ever been made on the old method of operating on internal piles by ligature. He strongly disapproves of Whitehead's operation, which consists in excising the complete ring of mucous membrane on which the piles are situated. The objections to it are that full and complete paralysis of the sphincter is necessary; that the procedure is difficult, tedious and bloody; that if union does not take place by first intention, pus accumulates and septic poisoning is invited,

and that secondary hæmorrhage is very likely to occur. Moreover, it is not necessary (as recommended by Whitehead) to remove the whole of the hæmorrhoidal plexus.

There are also other objections to the operation. There is the risk of stricture of the rectum if the mucous membrane be removed in its entire circumference. Besides this, the sutures employed to unite the mucous membrane with the skin may cause ulceration and fistula ; and the method is unsuitable whenever complications exist. On the other hand, judged by the results, both as regards cure of the disorder and the almost complete absence of risk of any kind, the treatment of internal hæmorrhoids by the ligature must be pronounced most satisfactory. The large majority of English surgeons will endorse this opinion.

7. A new clamp-forceps for suturing excised hæmorrhoids.

The first volume of *Mathews' Med. Quart.*, p. 326, contains a suggestion by R. Jones, of Liverpool, of a simple method of treating the wound after excision of hæmorrhoids. This consists in cutting off the hæmorrhoid, after clamping it with an ordinary instrument an eighth of an inch beyond the clamp, and sewing the cut edges together with a continuous catgut suture, after which the clamp is removed ; the operation is then complete. This plan has been adopted by several American surgeons, but the pedicle is found to be too short, and sutures cannot be passed through it so as to control hæmorrhage, nor are they likely to hold sufficiently long for primary union to be complete.

In order to avoid this drawback, S. T. Earle, of Baltimore, has devised a pair of clamp-forceps, which he has found to act very satisfactorily (*Mathews' Med. Quart.*, January, 1896, p. 21). The beak of the instrument is set on the blade at an angle of about forty degrees, is one and two-thirds of an inch long, and much smaller at its point than at its junction with the blades ; each beak has a serrated edge on the upper part of its inner flat surface to prevent the cut edges of the wound from slipping ; the blades can easily be taken apart, and have three catches near the handle for holding them together when clamped. The mode of application is as follows:—The pile is caught with catch-forceps at its most prominent part, pulled outwards and downwards, and then the clamp-forceps is applied as near its base as may be thought proper ; after being closed as tightly as possible, the part of the hæmorrhoid above the beak of the forceps is cut off close, then the suturing is begun at the distal end of the clamp, and is continued over and under the latter until the whole cut surface is included, but is not drawn tight. The thread

should not be tied at its commencement, but held with a pair of catch-forceps, so that the running suture, when complete, may be drawn from both ends. Lastly, the clamp is loosened, when it can easily be slipped out from between the sutures, the two ends of which are drawn sufficiently tight to bring the cut edges into close apposition and control all hæmorrhage; the two ends are made fast by a knot in each, close to the mucous surface. Earle claims for this instrument that it enables the operation to be rapidly completed; it adapts the cut surfaces closely and evenly; exposes the least possible amount of raw surface, and produces very little contusion of the compressed tissue.

A perusal of the various articles and lectures to which reference has been made in the preceding paragraphs serves at least to show that no decidedly novel method of dealing with any form of rectal disease has been advocated during the period covered by the "Year-Book." It is obvious that the important question as to surgical interference in cases of advanced cancer of the rectum is answered very differently by different surgeons. Doubtless only a minority would regard all cases of this kind as quite beyond the legitimate range of operative treatment; but, on the other hand, the objections urged by Heath, Mathews and other surgeons against the formidable operations now in vogue cannot be summarily refuted. A reasonable conclusion as to the expediency of active interference must be based on a far larger number of trustworthy reports than are at present available. The subsequent histories of cases subjected to operation are seldom fully supplied, and reports thus defective are comparatively useless as guides to practice.

The following works on Rectal Diseases have recently been published:—"Diagnosis and Treatment of Diseases of the Rectum, Anus and Contiguous Structures," by S. G. Gant, M.D. Philadelphia: The F. A. Davis Company. "Treatise on Diseases of Rectum, Anus and Sigmoid Flexure," by J. M. Mathews, M.D. New York: Appleton & Co. "Diseases of the Rectum" (Sixth Edition), by W. and H. W. Allingham. London: Baillière, Tindall & Cox.

VENEREAL DISEASES.

BY J. ERNEST LANE, F.R.C.S.,

*Surgeon to Out-Patients and Lecturer on Anatomy, St. Mary's Hospital ;
Surgeon to the London Lock Hospital.*

I. The treatment of syphilis by intra-muscular injections of calomel.

An interesting discussion took place on this subject at the Société Française de Dermatologie et de Syphiligraphie, in which most of the authorities expressed their views. (*Ann. de Derm. et de Syph.*, March, 1896.)

Portalier opened the discussion by making known the results of this treatment, carried on for fourteen months under the direction of Fournier, the number of patients being sixty-five and the number of injections 400. The syringe used was the glass one of Dr. Feulard, which was boiled in distilled water before each injection ; the needle, made of iridio-platinum, was 5 or 6 centimetres in length. The following was the formula of the preparation :—

R	Powdered Calomel	...	...	...	5 centigrammes
	Hydrochlorate of Cocaine	...	...	...	1 centigramme
	Olive Oil,	sufficient to form	1 cubic centimetre.		

The skin having been washed with sublimate solution and alcohol, the needle was thrust in perpendicularly to its full length, and the injection having been introduced, it was withdrawn as quickly as possible, and the puncture covered with collodion. The injections were made sometimes into the retro-trochanteric fossa, sometimes into the gluteal region on the right and left sides alternately. On the first or second day after the injection some swelling and puffiness usually showed itself, together with a sensitiveness to pressure. At the end of the fourth day this commenced to diminish : the redness and heat of the skin disappeared, and there only remained a nodular swelling, variable in size, sometimes superficial, at others more deeply seated. This usually persisted for ten or twelve days, but occasionally lasted for weeks, or even months. In 3 per cent. of the cases the pain was *nil* ; in 37 per cent., it was trifling ; in 38 per cent., it

was moderate and easily tolerated; in 18 per cent., it was very severe; and in 3 per cent., it was literally unbearable: six of the sixty-five patients experienced such pain that they refused to submit to further treatment. Fever was frequently observed after the injections, and in six cases was violent and accompanied by gastric derangement; on about a hundred occasions there was slight febrile disturbance, with sickness, cramps, general fatigue and insomnia for two or three days and nights; the insomnia might be explained by the pain of dorsal decubitus. In 1 per cent. of the cases an abscess resulted; the inflammatory nodule, instead of subsiding, increased in volume, became soft and painful, the skin became reddened, and the swelling burst and gave vent to a thick, viscous, and sanguineous fluid. No salivation ensued if the gums and teeth of the patient were fairly sound, nor were there any cases of serious stomatitis even in those previously affected with gingivitis; in five cases slight salivation supervened, and diarrhoea in six instances, while one patient complained of colic after five injections. The injections were given in series: that is, four or five injections were administered in the course of eight or nine days, and then an interval of at least five weeks was allowed to elapse before the commencement of the next series. Portalier concluded that calomel injections were an appropriate substitute for internal medication in cases of intolerance of the digestive track, and that they were of great assistance to diagnosis in cases of doubtful sores.

Fournier called attention to the special indications for treatment by calomel injections, and to the class of cases in which syphilitic manifestations had been cleared up with remarkable rapidity through their agency. Amongst the manifestations, he mentioned first a case of an enormous phagedænic chancre of the tongue in which the diagnosis was very difficult, and which had been pronounced to be tertiary glossitis or epithelioma. Fournier made trial empirically of calomel injections, with the result that the tongue rapidly recovered. In cases of malignant precocious syphilis he found the injections most successful. In cases of tertiary glossitis, notably in those with a tendency to sclerosis, which were always obstinate and rebellious, he had on several occasions given calomel injections, and had found them answer better even than inunctions. In one case of very severe glossitis resembling epithelioma, the improvement was astonishing, though the cerebral syphilis from which the patient was also suffering showed no alteration. The cases in which this method was specially indicated were those of secondary glossitis, frequently met with amongst smokers,

which were indefinitely prolonged and surely progressive; these were a veritable triumph for the injections, which almost always cured them promptly. A matter of surprise to Fournier was that relapses frequently followed these successes; for instance, a patient with a remarkably confluent lichenoid syphilide was given weekly injections of calomel, which caused the eruption to disappear with remarkable rapidity, but fifteen days afterwards he returned suffering from grave iritis. Fournier concluded that calomel injections exercise a remarkable influence on syphilis, and possess powers superior to any other form of treatment.

Hallopeau formulated his views under the following heads:—

(1) Hypodermic injection of *soluble* mercurial salts should be definitively abandoned, for their administration in sufficient doses is too painful, and the employment of cocaine in conjunction with them is attended with danger.

(2) Hypodermic injections of “grey oil” are safe if used in moderate doses, but should be reserved for hospital patients, and for patients who cannot be treated at home.

(3) Calomel injections have the drawback of being exceedingly painful, and this would prevent their being adopted as a routine treatment; they should be reserved for the cases in which a very energetic and rapid action is indicated, as in intractable syphilides, and they are also appropriate after the failure of all other methods.

(4) Calomel injections, unless practised with the greatest care, may give rise to abscesses.

(5) The indurated nodosities left after the injections may become the seat of tertiary syphilitic manifestations.

Morel-Lavallée considered that this plan presented a number of difficulties: (1) the pain—sometimes insignificant, usually severe, occasionally intolerable; (2) the injections are sometimes followed by generalised pains, lumbago, and often by a true access of fever; (3) the occasional formation of an abscess at the seat of injection.

Abadie advocated giving the injections every other day, and in smaller doses, and preferred an aqueous to a fatty vehicle, as the former was more readily absorbed. The addition of a small quantity of cocaine entirely abolished pain; the formula used was:—

R	Hydrargyri Cyanidi	...	...	...	50 centigrammes
	Cocain. Hydrochlor.	...	...	...	50 ,,
	Aq. Destillatæ	...	...	...	50 grammes

He always commenced with half a syringe, in order to test the susceptibility of the patient, for the first injections were never

well borne. Instead of injecting the solution deeply under the fascia into the intra-muscular tissue, he took great care to inject into the cellular tissue, and followed each injection by gentle massage. Abadie, however, remained of the opinion that intra-venous injections were superior to the subcutaneous or intra-muscular injections of calomel.

2. Intravenous injections of mercurial solutions in syphilis.

This mode of treatment, the technique of which was fully described in the "Year-Book of Treatment for 1896," has secured a noteworthy adherent in the person of **Stoukovenkoff**, who gives his experiences (*Therap. Woch.*, 1895, p. 1133). He concludes, contrary to the opinion of Baccelli, that the quantity of mercury necessary to obtain a therapeutic effect is not less than that necessary in the subcutaneous injections of the salts which do not coagulate albumen. The sublimate is not the best salt for intravenous injections. It is not possible to arrive at a definite judgment on intravenous injections as an ordinary plan of treatment. The practical employment of this method requires minute attention to details. The obstacles to its becoming popular, such as phlebitis, thrombosis, and the apparent absence of superficial veins, would be overcome by later improvements in the technique.

Ernest Lane, in a paper read before the International Congress of Dermatology held in London in August, 1896, stated that he had adopted this plan in every case of syphilis admitted into the London Lock Hospital during the previous nine months, and, as a result of his trial, he considered that it compared favourably with other methods of treatment. The preparation used was cyanide of mercury in 1 per cent. solution, and the amount used at each injection was 20 minims, or about $1\frac{1}{4}$ gramme, though in some of the severer cases he commenced with double that dose. The number of cases treated was seventy-six, and the number of injections was upwards of 1,000. The cases embraced nearly all the possible manifestations of the disease. The number of injections necessary varied from forty-six to four. Of the patients treated fifty were relieved, and by "relieved" was meant that they left the hospital absolutely free from syphilitic manifestations; sixteen improved under treatment, but still presented some trace of disease; four refused to undergo the treatment; and in six instances it had to be suspended owing to the impossibility of bringing the veins into sufficient prominence. In a few cases the injection missed the vein, but as a rule very little inconvenience or pain resulted therefrom; in one patient, in whom the injections

were introduced into varicose veins on the dorsum of the foot, an abscess supervened, and from this it may be inferred that the walls of the vein selected must be perfectly healthy. With this one exception, no appreciable change could be detected in the walls of the selected veins, nor did any thrombosis follow, though in one case as many as twenty-three injections were introduced into each arm. The conclusions arrived at were that the injections were painless, the functions of the digestive tract were not interfered with, the doses of the mercurial salt were small and certain of absorption, the treatment was perfectly safe, and the resulting improvement was certain and rapid. The only real objection to the method was the difficulty experienced in some cases of making the veins stand out, and in a certain proportion of patients, especially amongst women, this might be an insuperable obstacle.

3. Serumtherapy in syphilis: indications for its employment.

Rochon (*Méd. Moderne*, August 29, 1896) draws attention to the fact that this treatment, though of little avail against the secondary manifestations, is often efficacious in the tertiary stage of the disease. The reason of this is that, in the secondary period, the patients are as a rule strong and capable by themselves of successfully resisting the infecting poison, while in the tertiary stage they may be so enfeebled by the disease as to be unable to react to treatment by mercury and iodide of potassium, and as an aid to their recovery require some efficient constitutional tonic. In a healthy individual, mercury and the iodides not only increase the powers of resistance, but by diminishing the virulence of the toxin enable him to fight against it successfully, whereas if the patient does not react to the usually recognised modes of treatment the inference is that they are powerless to help him, and that the intervention of some other agent is called for. It is in such cases alone that serumtherapy is of any value; and, consequently, it follows that this plan of treatment is indicated in tertiary manifestations, and possibly in cases of malignant syphilis, and in others in which the nervous system is specially involved; especially is it to be recommended in the neurasthenia of syphilitic origin in which the usual antisiphilitic treatment is not only useless, but worse than useless. Rochon brings forward cases of insomnia, loss of memory, dimness of vision, hallucinations, intense headache, etc., all of which yielded to treatment by antisiphilitic serum, as a proof of the correctness of his opinions; and he further states that in cases where the syphilitic manifestations are at their height the treatment has little, if any, effect.

4. The treatment of early syphilis by injections of hydrocele serum from a syphilitic subject.

Prof. Boeck of Christiania (*Courrier Méd.*, July, 1896) mentions seven cases of syphilis treated by subcutaneous injections of hydrocele fluid taken from a patient who had contracted syphilis six years previously, and who was still suffering from tertiary manifestations. The injections were introduced daily or every other day into the dorsal muscles, great care being taken to render the serum aseptic; the amount of each injection was from 1 to 6 grammes, the usual quantity introduced being 2 or 3 grammes. The total quantity employed in each case varied from 32 to 92 grammes, and in one case was as much as 300 grammes. No mercury or iodine was administered. The result of the treatment was very satisfactory, and in all the cases it was followed by a rapid disappearance of the initial lesion, as well as by a distinct attenuation of the secondary manifestations. If given during the second period of incubation, *i.e.* between the outbreak of the sore and the first appearance of constitutional symptoms, the latter were greatly retarded. In all the cases the secondary period was shortened, and never lasted longer than from four to seven months; and the earlier the treatment was commenced the more efficacious it appeared to be. Boeck concludes that the serum from a tertiary syphilitic subject exercises an undoubtedly curative action on recent syphilis, and, without being as striking in its results as mercury and the iodides, it tended more than these to shorten the period of the secondary stage. Fifteen years previously Boeck had tried injections of serum from secondary syphilitic subjects, but the results were not so conclusive as when the serum was taken in the tertiary stage of the disease.

McCall Anderson (*Glasgow Med. Journ.*, 1896, xlv., p. 264) describes a case treated by syphilis antitoxin. The patient had an indurated chancre of four weeks' duration followed by copious syphilides, pains in the head and limbs, sore throat and hoarseness, condylomata ani, and mucous plaques on the buccal mucous membrane. Injections were given every second day from November 15 to December 9, at first $\frac{1}{2}$ c.c., increased till on the last occasion 5 c.c. were employed; in all $35\frac{1}{2}$ c.c. of serum were injected, or about an ounce and a quarter. On December 11 the induration of the sore had lessened; the glands remained unaltered; the skin was clear, with the exception of slight staining, and the mucous patches had almost disappeared. The serum was taken from a patient with well-marked syphilis; he had contracted a sore two years previously, and this was followed by cutaneous syphilides and headache; he had been under treatment the

previous year for syphilitic psoriasis, and when the serum was taken from him he had several annular tubercular patches on his skin.

5. The treatment of syphilis by the toxins of erysipelas and the bacillus prodigiosus.

R. H. Greene (*New York Med. News*, October 10, 1896) reports seven cases of syphilis treated by these injections. The fact that an attack of erysipelas will bring about the disappearance of cutaneous syphilides has been noted by several observers, and has induced Greene to utilise injections of erysipelas toxin for the treatment of syphilis. The dose of the solution used was from 1 to 10 minims, but no details are given as to the method of its preparation. The conclusions arrived at are: (1) The toxins can be administered hypodermically without danger of abscess formation or of any serious constitutional reaction; (2) in almost every case changes in the appearance of the syphilitic eruptions showed themselves in from forty-eight to seventy-two hours after the commencement of the injections; (3) it was a matter of difficulty to procure solutions containing these toxins with any uniformity of strength; (4) the reappearance of the cutaneous eruption in two cases showed that their disappearance after the use of the toxins did not indicate any change in the course of the disease, for, when erysipelas had apparently caused the resolution of the cutaneous manifestations as in several reported cases, fresh eruptions occurred later.

6. The relative value of iodine salts in the treatment of syphilis.

Briquet (*Journ. des Mal. Cut. et Syph.*, February, 1896), after comparing the relative value of the different preparations of iodine, concludes—

1. That all the iodides possess marked antisyphilitic properties.

2. That iodide of potassium is as a general rule the most active, but that iodide of rubidium is often better tolerated, and seems to be of equal value.

3. When iodide of potassium is not tolerated, recourse should at once be had to iodide of sodium, which usually proves an efficient substitute.

4. Iodide of strontium has no advantage, and should be avoided in syphilitic headaches.

5. Iodide of ammonium ought to be reserved for certain severe cases of syphilis in which iodide of potassium has failed, or produced but little effect; it is particularly serviceable in tertiary eruptions.

6. Iodide of lithium and calcium act more slowly and less surely than the above-mentioned preparations.

7. The treatment of gonorrhœa by argonin.

Swinburne (*Journ. of Cut. and Gen.-Urin. Dis.*, August, 1896) advocates the use of argonin in the acute stages of gonorrhœa. Argonin is a combination of silver with casein, and is a white powder which, carefully heated with water over a water bath, forms an opalescent, viscid, albuminous fluid. Of the powder, fifteen parts contain as much silver as one part of silver nitrate; according to Jadassohn it possesses powerful germicidal properties; it is not irritating to the mucous membrane of the urethra, and is not escharotic. Swinburne first irrigated the urethra with a weak solution of permanganate of potash, and then filled the urethra to distension with a 2 per cent. solution of argonin, which was subsequently increased in strength up to 10 per cent.; the injections were introduced once daily. In all the cases a rapid diminution in the discharge was noted, and in the majority of them a lessening in the number of gonococci; but if the patient omitted the treatment for a day there was an increase both in the amount of the discharge and in the gonococci present. One of the most noticeable features was the absence of any inflammatory reaction, and the pain following the injections was trifling. Argonin stains the linen and hands in the same manner as nitrate of silver, but cyanide of potassium will readily remove any marks left by it. Swinburne concludes that this agent is absolutely harmless; that it shows marked power in causing the disappearance of the gonococcus; and that it is most efficacious in allaying the inflammatory stages of the disease.

Lewin (*Berlin. klin. Woch.*, February, 1896) states that argonin destroys the gonococcus very rapidly without producing any irritation. He employed it in a solution of the strength of 3 to 200, of which 10 c.cm. were injected five times daily, the fluid being retained in the urethra for five minutes. Of twelve cases observed, in nine the gonococci disappeared in from two to six days, in one case the gonococci were present after ten days of this treatment, and in another they reappeared as soon as the argonin was discontinued. The secretion persisting after the discontinuance of argonin was easily overcome by the use of astringent injections.

Bender (*Der aertzliche Prakt.*, 1896, No. 1) reports the results of the treatment of fifty-four cases of gonorrhœa with argonin; of these cases, thirty were acute and twenty-four chronic. In the acute cases the gonococci disappeared in under a fortnight in twenty-six cases, while in four instances they persisted somewhat

longer. In the more chronic cases the gonococci were not to be discovered at the end of a fortnight in seventeen cases, while in seven patients they were present for three weeks or even longer. In two cases the argonin treatment produced no effect, but here all other agents previously tried had failed likewise. Bender confirms the opinions of the other writers on this agent, as to the speedy destruction of the gonococci and the absence of any inflammatory action. **Jadassohn** (*Archiv für Derm. und Syph.*, 1895) seems to have been the first to make use of argonin, and he especially recommends it in the treatment of acute gonorrhœa, both of the anterior and posterior urethra; in cases of anterior urethritis the solution is retained in the urethra for five or even ten minutes, while in posterior urethritis one or more instillations of 5 or 10 c.cm. of the solution are introduced into the pars posterior by means of a Guyon's syringe.

[The favourable opinions pronounced on this new remedial agent are fully confirmed by the writer of this article; he has used it in a considerable number of cases of acute gonorrhœa, and is perfectly satisfied with the results obtained. In hospital practice, however, it cannot be employed very extensively owing to its prohibitive price, but this is the only objection that can be urged against it.]

8. Treatment of gonorrhœa by irrigations of potassium permanganate.

This method, described in the "Year-Book of Treatment for 1896," and usually known by the name of its introducer, Janet, has found many adherents during the past year.

Moeller (*Archiv für Derm. und Syph.*, vol. xxxv., p. 45) mentions 100 cases which had been under his treatment, and states his conclusions as follows:—(1) As an abortive treatment the method of Janet is superior to all others; it always gives positive results when the treatment is commenced two or three days after infection. (2) In later stages, when the gonorrhœa has acquired a greater virulence, the reaction to this treatment is limited. (3) In the chronic and subacute cases this treatment has ordinarily a prompt and safe action, though strong solutions are not without danger.

Goldberg (*Centralb. f. d. Krankh. d. Harn. und Sexual-Org.*, 1896, vol. vii., 142) is of opinion that irrigations of permanganate of potash are indicated when gonococci are present in the discharge, though not in the acute inflammatory stages. In 95 per cent. of cases, the irrigations bring about the definitive disappearance of the gonococci; in half the cases their disappearance took place in the space of from eight to fifteen days, and quite independently

of the stage of the disease in which the treatment was commenced. As an abortive method it is of great value, the favourable results being due to its chemical and mechanical action, while possibly it has some specific effect upon the gonococcus.

9. The treatment of gonorrhœa by formalin.

Howland (*Journ. of Cut. and Gen.-Urin. Dis.*, June, 1896) gives notes of five cases of gonorrhœa treated by solutions of formalin. Irrigations of the posterior urethra were made with hot formalin solutions, at first twice, and afterwards once, daily. The cases were under treatment about a fortnight, with one exception, in which the injections were continued for twenty-seven days. The effect of this substance was that the gonococci shrivelled up, and lost their characteristic appearance.

[As a therapeutic agent formalin does not compare favourably with argonin; it is said to have a necrotic action on the skin, to be unsuitable for wound treatment, but it is specially useful as a hardening agent. From the above report it seems to have effectually hardened, or at any rate to have distorted the gonococci, but it is a matter of speculation whether the hardening process will prove beneficial to the urethra.]

10. The treatment of seminal vesiculitis.

Eugene Fuller (*Journ. of Cut. and Gen.-Urin. Dis.*, September, 1896) advocates extirpation of the seminal vesicles in cases where hygienic and tonic methods have failed, and where a radical cure is desired. The majority of cases of seminal vesiculitis yield to the treatment previously recommended by Fuller, and described in the "Year-Book of Treatment for 1895," pp. 313-14, but a small minority are intractable, and require more heroic measures for their relief. The operation recommended for extirpation of the vesicles requires the same incision and procedure as Kraske's operation for excision of the rectum, but on exposure of the bowel it is retracted to one side so that the seminal vesicle, the prostate, and the base of the bladder are freely exposed. The vesicle and sclerosed tissue surrounding it are snipped off with scissors, a drainage-tube is introduced, the wound sewn up, and a perineal urethrotomy is performed to ensure that no subsequent complications occur from retention of urine. The operation was performed successfully upon two patients, though in one of them a sinus remained near the middle of the Kraske incision. Fuller concludes that the operation should be reserved for extreme cases of chronic non-tuberculous vesiculitis associated with severe subjective symptoms, in which previous treatment has failed; that the Kraske incision is the most suitable one; that the subjective symptoms associated with the disease ought to disappear

after the operation, and that with one seminal vesicle the sexual function is strong and satisfactory.

[The writer has never yet met with a case of seminal vesiculitis calling for operative treatment, and would hardly feel justified in recommending an operation of such difficulty and even danger as the one above described, in which the rectum, bladder, ureter, and peritoneum might very easily be wounded. A far less formidable procedure would be to incise the swelling through the anterior wall of the rectum, and pack the cavity with antiseptic gauze.]

BIBLIOGRAPHY.

Neumann, Isidor. "Syphilis." 1 Hälfte mit 29 Abbildungen. 2 Hälfte mit 31 Abbildungen. Wien: Alfred Holder. 1896. (Royal 8vo; pp. 1,004.)

Mauriac, Charles. "Traitement de la Syphilis." Paris: G. Masson, 220 Boulevard Saint-Germain. 1896.

Taylor, Robert W. "The Pathology and Treatment of Venereal Diseases." Lea Brothers & Co., Philadelphia. 1895.

Proksch, J. K. "Die Geschichte der venerischen Krankheiten." Zweite Theil. Bonn: P. Hanstein. 1895.

Fuller, Eugene. "Disorders of the Male Sexual Organs." Philadelphia: Lea Brothers & Co. 1895.

Hyde, James Nevins, and Montgomery, Frank K. "Manual of Syphilis and the Venereal Diseases." Philadelphia: W. B. Saunders. 1895.

THE DISEASES OF WOMEN.

BY G. ERNEST HERMAN, M.B. LOND., F.R.C.P.,

Senior Obstetric Physician to the London Hospital ; Examiner in Midwifery to the Universities of Oxford and London.

1. The operative treatment of retro-displacements of the uterus.

This subject was set down for discussion at the International Congress of Gynæcology and Obstetrics, held at Geneva in September. It was well chosen. There can be little doubt that in this matter we possess important additions to our means of treatment ; although, as the discussion showed, the indications for each proceeding are not yet defined by common agreement.

Many cases of retroversion and retroflexion are not accompanied by any symptoms at all ; and in most of the cases in which there are symptoms, these are only symptoms of prolapse, and the uterus can be kept in position with a pessary. In such cases I see no reason for performing any operation. The insertion and occasional removal and re-insertion of a pessary are doubtless disagreeable to the patient, and the fact of wearing a mechanical appliance is repugnant to her. But these things, when given the fullest weight, are trifles compared simply to the discomfort attendant on a cutting operation under anæsthesia, to say nothing of the risk of evil after-results that attends each of the operations under consideration. When I read of gynæcologists who in a very few years number their cases by hundreds, I cannot escape the conclusion that their views of the indications for the operative treatment of retro-deviations of the uterus are different from those generally held in England.

But there are undoubtedly some cases, although they are not numerous, in which retro-deviation of the uterus causes the patient a good deal of pain, and treatment by mechanical support fails to relieve. In these cases we have three operations to choose from : Alexander's operation, which is the pulling the fundus uteri up and forwards by shortening the round ligaments ; ventral fixation, which is stitching the uterus to the anterior belly wall ; and vaginal fixation, which is fastening the uterus either to the vesico-uterine peritoneal pouch or to the cellular tissue between uterus, vagina, and bladder.

Küstner thinks that although no operation can restore the uterus and its adnexa to their normal position, yet the new position, artificially produced, is better than the retro-deviation. If the uterus is fixed, the adhesions must be broken down. This can be better done by laparotomy than by vaginal incision. The latter is less accurate, and does not enable us to avoid wounding neighbouring organs. For reducible retroflexion he holds Alexander's operation to be the best, for it gives in every case a normal or nearly normal position to the uterus. If there are extensive adhesions, the best operation is laparotomy, breaking down of adhesions, and ventral fixation after the method of Olshausen. The functions of the uterus are not interfered with either by Alexander's operation, ventral fixation, or vesico-fixation (stitching the uterus to the vesical peritoneum), but they are very much interfered with by vaginal fixation when this extends to a large part of the anterior surface of the uterus. Vaginal fixation ought therefore not to be performed on women in the child-bearing period. When women cannot conceive, this operation gives very good results. The best treatment of prolapse is ventral fixation, together with plastic operations to contract the vagina.

Pozzi holds that retroversion and retroflexion ought no longer to be regarded as distinct morbid entities. Retro-displacement of the uterus, either simple or with flexion, is observed in two entirely different conditions: (*a*) movable, and (*b*) fixed by adhesions, especially around the adnexa. The latter class of cases, according to Pozzi, is by far the more frequent. He thinks that retro-displacements at a time when tubo-ovarian lesions were almost unknown, were often confounded with tubo-ovarian swellings. For movable retroversion and retroflexion Pozzi thinks it would be better to substitute the term "excessive mobility of uterus." The symptoms in such cases are dependent on the mobility of the uterus and not on the direction it takes. Surgical treatment aiming at fixing the uterus by a limited part of its surface will give only temporary results. The treatment should provide for the cure of concomitant lesions, by such measures as curetting, restoring perineum, etc., together with supporting the uterus by a pessary. In retro-displacements with fixation, the disease of the uterus, tubes and ovaries is the principal condition. Many fixed retro-displacements are indolent lesions, giving no trouble until inflammation in the uterus and appendages is rekindled. There are cases in which the best treatment of a retro-displacement is vaginal hysterectomy: viz. cases in which the appendages have been removed by abdominal section and the uterus is large and heavy, so that if left it will sink down

again into Douglas's pouch. Hysteropexy, with curetting, amputation of cervix, and repair of perineum, is as long and as complicated a proceeding as hysterectomy. Alexander's operation, abdominal hysteropexy, vaginal and vesico-fixation of a movable uterus can only give temporary success.

Polk's opinions on the subject are as follows:—Retro-deviations, especially in a uterus capable of pregnancy, should not be healed by any operation that fixes the fundus or body to the abdominal wall, bladder, or vagina. In cases capable of pregnancy, uncomplicated retroversion should be cured by Alexander's operation, or by intra-peritoneal shortening of the utero-sacral and round ligaments by operation through the vagina. The same proposition, qualified by the words "if possible," applies to adherent retroversion. In an appendix Polk describes his operation. He opens the vagina through the anterior *cul-de-sac* and brings the fundus uteri into the vagina. Then he puts a suture round the round ligament as far from the uterus as will permit the sutured part to be attached to the uterus. This folds the ligament inwards upon itself, presenting two bends. One is sutured to the uterus, the other to the ligament outside the folded section. Special care must be taken to avoid the tube. This is repeated on the opposite side, the uterus put back, and the vagina sutured. Then Douglas's pouch is opened by a transverse incision. A suture is put over the utero-sacral ligament at about its middle, on both sides. These are drawn down and secured to the vaginal incision. This draws the cervix upwards and backwards.

Further experience of Polk's operation is needed before judgment can be safely formed upon it.

2. Pregnancy and labour after the operative cure of retroflexion of the uterus.

Vaginal fixation is a simple and safe operation. But the objection is brought against it that it leads to serious ill consequences if pregnancy follow. The following paper seems to me a very judicious exposition. It is by Strassmann (*Arch. für Gyn.*, Bd. 1.), and both brings out some facts and contains expressions of opinion. The position among our resources which the different kinds of operative treatment of the posterior uterine displacement will take, says the author, will depend upon the results in cases watched for long periods. The immediate results of some of these operations are brilliant. The questions are—Does the benefit last? And does the operation entail any ulterior disadvantages? Strassmann's paper gives some information on these points. Of all the methods of curing retro-displacements, Alexander's operation, in Strassmann's opinion, is that

which, in its final result, comes closest to the natural state of things. Pregnancy and labour have taken place after it and gone on without ill. [The effect that I have found from Alexander's operation is that, when done for prolapse or retroflexion with prolapse, it pulls up the uterus, but not the vagina. Cystocele, when present, remains as it was before the operation ; and the only difference is that the uterus comes down leaning forwards instead of leaning back. The operation is effective only in the rare cases in which retroflexion is present without appreciable descent. Strassmann's approbation appears to me formed on theoretical grounds ; he seems not to have thought it necessary to ask what the patients had to say.] Ventral fixation has the drawback that merely peritoneal bands of adhesion may be absorbed or may stretch ; and two cases have been reported (and are quoted by Strassmann) in which, in the band of adhesion between uterus and belly-wall produced by ventral fixation, bowel was caught and ileus produced. There is no evidence that ventral fixation produces any tendency to abortion. Strassmann quotes cases which show that when the uterus is firmly fixed either to the anterior abdominal wall or the anterior vaginal wall (as in the various vaginal fixations) the development of pregnancy takes place at the expense of the posterior uterine wall, so that the os uteri comes to be farther back and higher up than it should be. In one case (by Goubaroff) the difficulty so caused appeared to him such that he delivered by Cæsarean section ; but, from the report of the case, Strassmann says (and I agree with him) that the operation was unnecessary, for enough time had not been given for nature to see what she could do. Strassmann relates a case in which he delivered with forceps. His conclusion is that the more firmly the uterus is fastened to the anterior abdominal wall, the less part will the anterior wall take in the expansion of pregnancy. This proposition also applies to vaginal fixation. When a uterus in which this has been done becomes pregnant, the adhesion is pulled upon ; and if it neither yields, nor dilatation of the posterior uterine wall takes place, abortion must happen. He quotes from Weberstedt some interesting figures which bear on the tendency of retro-displacements to cause abortions. Among 177 pregnancies in 124 cases with retro-displacements treated and untreated, the number of abortions was 56, or 31·6 per cent. ; of 108 treated with pessaries there were 18 abortions, or 16·6 per cent. ; of 22 in which vaginal fixation was done there were 6 abortions, or 27·2 per cent. This leaves 47 who were left untreated, and they gave 32 abortions, or 68 per cent. These figures, if correct, show a distinct effect of treatment in preventing

abortion. Dührssen found 25 per cent. to be the frequency of abortion after ventral fixation—a figure very close to that of Weberstedt, close also to that among the population generally. If pregnancy after vaginal fixation reaches full term, it is likely that the vaginal adhesion will give way. Out of 12 cases in which Dührssen did this operation who went to full time, in 3 retroflexion again developed after delivery, or 25 per cent. If the adhesions do not give way, and the uterine enlargement goes on at the expense of the posterior wall, the os uteri is high up, and the head presses down in the sac formed by the anterior uterine wall below the adhesion, exerting little influence in expanding the cervix. It is therefore good practice in such a labour to bring down a foot early.

Strassmann holds that vaginal fixation should be done with great reluctance. A good trial of mechanical treatment should always be made. Fixation of a retroflexed uterus is no indication for surgical treatment, for the inflammation is the cause of the symptoms, not the displacement. If vaginal fixation is done at all, it should be done by opening the peritoneum. An operation in which the stitches are put in without seeing the uterus is uncertain in its result and involves just as much risk.

I entirely concur in Strassmann's last remark. While admitting that we need certainty as to the safety of labour after vaginal fixation, yet it seems to me that the danger, if there be any, is exaggerated. In the first place, the cases in which patients had difficulty in labour are very few; those in which labour was natural are many. Thus Klotz (*Cent. für Gyn.*, p. 538, 1896) reports 34 pregnancies after vaginal fixation, ending in 13 abortions, 15 normal labours, 5 terminated by forceps applied when the head was low down, and one case of version. He met with no trouble that he could attribute to the operation. Macan (*Brit. Gyn. Journ.*, 1896) has written the fullest account in the English language. He quotes Ruhl, who has watched 10 labours after vaginal fixation, 7 of which were normal, and three successfully terminated by version. It is true that he reports two other cases in which there was difficulty. The difficulty seems to be that the uterus is so fixed in an anteverted position that the os uteri is very far back, and the head seems to press down on the anterior wall of the lower uterine segment. But this state of things is sometimes seen in normal labour, and time and patience put it right; and I cannot help thinking that in some of these cases of labour after vaginal fixation difficulty might not have occurred had the attendant been in less of a hurry. But accepting the reporter's accounts that the difficulty

was real, it is clear that it can occur only in certain exceptional cases, and future observation will doubtless show which are the special features of the operations that are followed by difficult delivery. **Kossman** (*Zeit. für Geb. und Gyn.*, Bd. xxxiv.) relates a case in which labour after vaginal fixation was perfectly normal.

My experience of the operation is small, but I am satisfied that in certain cases it is a remedy of value. I do not expect help from it in cases of prolapse. But I have had three cases, women who had been married some years, and whose great trouble was dyspareunia, which had been present throughout the whole of their married life, and was due to deviation of the uterus backward. In each of them vaginal fixation of the uterus removed all the pain.

Ventral fixation is an operation the immediate results of which are brilliant. But they are not always permanent. When peritoneum is fastened to peritoneum the adhesions may be absorbed. Experience yet has to show whether when peritoneum is stitched to muscle the results are more lasting.

3. Intra-peritoneal hæmorrhage.

Cestan (*Gazette des Hôpitaux*, July 11, 1896) has written an interesting survey of the present position of our knowledge of this disease and our conduct in treating it.

Bernutz carefully distinguished between *encysted* intra-peritoneal hæmorrhage and bleeding into the general peritoneal cavity. He thought that the two conditions were differently brought about; that the rupture of a tubal gestation caused rapid death from hæmorrhage, and did not produce the local, encysted effusion of blood to which he applied the term "*hæmatocele*." Although wrong in this opinion, Bernutz was quite right in regarding free and encysted bleeding as clinically different. Well-marked cases of the two kinds of hæmorrhage differ from one another; but cases are seen which mark a gradation from one to the other. We know now that either form may result from tubal gestation, and that this condition is the cause of nearly all intra-peritoneal hæmorrhages.

Bernutz and his followers, not knowing the frequency of ectopic pregnancy, attributed encysted hæmorrhage to other conditions, which it may be interesting to review, as they still find a place in some of our text-books. They blamed, in the first place, *the peritoneum*. **Tardieu** and some others thought that the peritoneum sometimes exuded blood; but no one now accepts this. Bernutz thought that there was a hæmorrhagic form of

peritonitis—a menstrual pelvic peritonitis. We know that the small vessels of recent adhesions may bleed; but such bleeding is too insignificant to be of any clinical importance. There is no such thing as pelvic peritonitis causing such hæmorrhage as to form a tumour. The symptoms—amenorrhœa, pain, irregular losses—which Bernutz thought characterised this form of peritonitis we now know to be those produced by early tubal gestation, and the accidents incident to it.

Secondly, *the ovary*.—Cases of ruptured ovarian cysts and of ovarian apoplexy were described by many. Undoubtedly these conditions exist, and sometimes cause fatal bleeding. But in the great majority of the cases in which tumours formed by intra-peritoneal bleeding have been attributed to disease of the ovary, critics now think that the disease was ectopic pregnancy.

Thirdly, *the pampiniform plexus*.—A burst vein in the broad ligament may cause rapid death from hæmorrhage. But that is not here the question. Cases have been published in which small encysted hæmorrhages have been attributed to disease of veins in the broad ligament. But here again modern criticism finds in all of them good reason to think that there had been pregnancy.

Fourthly, *the tube*.—Here we come to a most important question: Does a healthy tube ever bleed? It was formerly supposed that under the influence of the menstrual congestion healthy tubes sometimes poured out blood; that when the outflow of blood from the uterus was obstructed, blood sometimes regurgitated along healthy Fallopian tubes, and that sometimes the uterine body bled so fast that the blood could not all get out by the cervical canal, and so some ran along the tube. No one now thinks that a healthy tube bleeds, and the only cases in which regurgitation is now admitted to take place are those in which there is congenital occlusion of the genital canal high up.

Does a tube that is diseased, but not pregnant, ever bleed? Cases of hæmatosalpinx ascribed to salpingitis have been published. In some of these re-examination of the specimen has revealed evidence of pregnancy. It is a fair inference that in those not re-examined, had this been done, it might have had a similar result.

We are thus on very insecure ground until we come to the one great cause of intra-peritoneal bleeding, viz. tubal pregnancy. The firm establishment of this fact is due to **Lawson Tait**. Others before him had shown that it was sometimes the cause, but Tait forced upon the profession its overwhelming preponderance.

Tubal pregnancy ends in one of three ways: hæmato-salpinx, tubal abortion, tubal rupture.

Hæmatosalpinx is the earliest and most favourable termination. The ovum dies; the tube is filled with clot.

Tubal abortion means that the ovum is expelled from the tube with hæmorrhage. The ovum may be entire, or its membranes may be torn, or it may have undergone changes like those which, when they affect an intra-uterine ovum, make it what is called a mole. Bleeding may be slight, or it may be abundant and repeated, and of dangerous amount.

Lastly, we have the well-known occurrence of *rupture*, which usually happens within the first three months. It is generally produced by the sudden distension of the tube by hæmorrhage into it. Repeated attacks of slight bleeding, accompanied by faintness, pallor, and abdominal pain, and leading to the formation of a swelling around the pregnant tube, often precede the great hæmorrhage that proves fatal. Rupture takes place at the part of the tube at which the placenta is attached, and, according to Martin, in four cases out of five this is at the part of the tube in relation to the peritoneum. If there are peritoneal adhesions around the tube, these may limit the hæmorrhage; hence **Ségon**d has formulated an aphorism—"slight hæmorrhage into a morbid peritoneum, great hæmorrhage into a healthy peritoneum." This useful aphorism has an important bearing on practice.

It is difficult to form an estimate of the frequency with which rupture of the tube with intra-peritoneal hæmorrhage proves fatal; for in the cases that recover the diagnosis remains unverified.

If the placenta is inserted in the side of the tube between the peritoneal folds, and in relation with cellular tissue, the foetus may go on growing between the folds of the broad ligament and reach term in this situation. Many cases have now been described in which a full-term foetus has undoubtedly thus developed.

There are thus, clinically, two terminations of tubal pregnancy: (1) inundation of the peritoneum with blood, and speedy death; (2) formation of a hæmatocele, and probable recovery. The hæmatocele is generally in Douglas's pouch, but may be elsewhere, if, as has occurred in a few rare cases, there are already adhesions that divide the peritoneal cavity into spaces not having natural boundaries.

The symptoms of hæmatocele are well known. They are more severe with rupture than with tubal abortion. With

Gallic precision, **Cestan** applies descriptive adjectives. There is "*cataclysmic hæmatocele*"—rupture without adhesions, with inundation of the peritoneum and rapid death; "*dramatic hæmatocele*"—rupture with limited hæmorrhage, an alarming accident, the repetition of which may lead to death, but which generally ends more favourably; and "*insidious hæmatocele*" from tubal abortion, in which the symptoms and progress are essentially favourable. Cestan admits that this is often a theoretical distinction; and that there are exceptional cases which do not fall into these groups or present the usual symptoms of intra-peritoneal bleeding. He has collected together and roughly classified cases in which exceptional symptoms led to mistaken diagnosis. In some of these, doubtless, the peculiarity was in the mind of the observer rather than in the symptoms; but the cases are nevertheless instructive. (a) Certain very acute cases of ruptured ectopic gestation have been taken for poisoning; others for acute peritonitis, for perforation, strangulation, or obstruction of bowel; for strangulated hernia, for appendicitis, for biliary or renal colic, for rupture of the bladder. In one case an inexperienced doctor took for a bilious attack a tubal rupture that ended fatally; and in another three doctors saw a patient dying with a ruptured tube, and produced the three diagnoses of cholera, poisoning, and cerebral congestion. (b) In some cases epigastric pain and vomiting have led to the diagnosis of perforation of stomach; in others, severe local pain and tumour have made the doctor think of an ovarian cyst with twisted pedicle. (c) In a third class, error is provoked by an unusual seat of the tumour. It has been found in the iliac fossa, no part of it being in the true pelvis. In one case it extended from the right iliac fossa to the diaphragm, and in another occupied the right lumbar region.

There are cases in which the opposite error has been made and other conditions taken for hæmatocele. Among the conditions that have been diagnosed as hæmatocele are ovarian cyst with twisted pedicle, sarcoma of ovary, pelvic cancer, iliac aneurysm, and rupture of pancreas.

The diagnosis has to be made before, at the time of, and after rupture. *Before rupture*, the symptoms of pregnancy, together with the presence of a rounded elastic tumour, at the side of a large uterus, which tumour, at successive examinations, is found to be getting larger, should make us think of a tubal pregnancy, especially if curetting (not in such cases a prudent thing to do) brings away pieces which, on microscopic examination, show decidual tissue. Such a tumour, in the absence of signs

of pregnancy, would be supposed to be a pyosalpinx, a small ovarian cyst, or a fibroid.

At the time of rupture, three points establish the diagnosis. First, in a woman at the age at which pregnancy is possible ectopic gestation is by far the most frequent cause of intra-peritoneal hæmorrhage, and therefore the one that should be first thought of. Secondly, the history will give the symptoms of early pregnancy, menstrual irregularities, etc. Thirdly, examination by the vagina, which in a woman with such symptoms should never be omitted, will give the signs of early pregnancy, softening and violet colouring of the cervix and vagina, and possibly tumefaction of the *cul-de-sac*.

After rupture a hæmatocele has been taken for pelvic peritonitis, or for retroversion of the gravid uterus.

The *treatment* is that in which the practice of to-day differs most from that of the time of Bernutz. Before rupture, if the diagnosis is even probable, all reasonable men at the present day would advise the removal of the diseased tube; and the only question is, How? By laparotomy? By incision of Douglas's pouch? By anterior colpotomy? At present Cestan thinks we have not enough experience of the two latter methods, and they cannot yet displace laparotomy. The question then arises, To prevent relapse, should the parts on both sides be removed? Cestan says, No. This is the preventive treatment.

Next we come to the treatment when rupture has occurred. In case of one of those grave ruptures which inundate the peritoneum with blood, immediate interference is the right practice. There are persons who think otherwise, on the ground that the bleeding may cease spontaneously, and that operation entails certain immediate and ulterior ill consequences. But the danger of death, if the patient is let alone, is so great that Cestan holds the duty of intervention to be unquestionable. Cestan puts the mortality of cases let alone, from comparison of the figures of different observers, at about 86 per cent.; that of operations at about 15 per cent. Terrier puts the reason very clearly: there is a vessel bleeding—you must open the belly to secure it. It is idle to wait until the shock has passed off. Theories about the shock being due to "inhibition of sympathetic ganglia," etc., etc., are hypothetical. Nothing justifies delay but certainty that bleeding has ceased. Temporising is only allowable while the necessary preparations for operation are being made. If the patient is in danger of dying while these preparations are being made, the best restorative is the intravenous injection of fluid.

The object of the operator is to secure the bleeding point

and cleanse the peritoneum from blood. This cannot be done without the possibility of inspection of the parts which only abdominal section can give. Cestan quotes cases in which attempts at doing this by a vaginal incision ended in failure and the death of the patient.

The rupture is incomplete.—Here expectant treatment is legitimate. If the belly has to be opened, it can be done under more favourable conditions; possibly it may be unnecessary, colpotomy being enough. There is an encysted hæmatocele. The results of the surgeons who first interfered with hæmatoceles were deplorable, and this led expectant treatment to be regarded as the only right one. Then Tait and others urged laparotomy; but more recently in France colpotomy is becoming its successful rival. If an encysted hæmatocele is let alone, it may be absorbed; but its absorption may take several months. In Cestan's opinion, the simplicity and safety of colpotomy should lessen the number of cases left to nature. If the incision is made large enough, the condition of both tubes can be investigated and the cavity drained; the diseased tube can, if necessary, be removed. In these cases there is not the need for immediate arrest of hæmorrhage which makes it so necessary to see the parts when laparotomy is done for the arrest of intra-peritoneal bleeding. If colpotomy is done, and some unexpected difficulty is met with, the abdomen can then be opened. The two conditions that indicate vaginal intervention are vaginal bulging and cessation of bleeding. When a hæmatocele has suppurated, a vaginal opening is clearly indicated.

Cestan then gives statistics he has collected that support the practice he advocates. Out of 531 cases of ruptured ectopic pregnancy—

- 11 were discovered *post mortem*.
- Of 6 the result is not mentioned.
- 86 were left to expectant treatment, with 15 per cent. of recoveries.
- 79 were treated by immediate laparotomy, with 84 per cent.
- 82 by laparotomy, within five days, with 82 per cent.
- 114 by laparotomy, within two weeks, with 90 per cent.
- 73 by laparotomy, later than two weeks, with 80·5 per cent.
- 6 by early colpotomy, with 66·6 per cent.
- 63 by secondary colpotomy, with 99·9 per cent.
- 5 by abdominal hysterectomy, with 80 per cent.
- 6 by vaginal hysterectomy, with 50 per cent.

The results which Cestan thinks most important are these: the 84 per cent. of recoveries after immediate laparotomy, in cases of cataclysmic rupture; the 99·9 of recoveries after secondary colpotomy in cases of hæmatocele. These figures, he holds, indicate the right line of treatment.

Delore (*Lyon Méd.*, March, 1896) has written a good paper on hæmatocele, which I mention because he accepts as a fact the so-called menstrual hæmatocele in which Cestan does not believe. But the evidence, if such it can be called, upon which Delore relies is simply this—that in many cases of pelvic hæmatocele there is not proof that tubal gestation had been present. Delore, in such cases, assumes that it was not present, and that the case was one of menstrual hæmatocele. I discover no other reason than this. I think it a sounder inference to assume that ectopic pregnancy (which we know is answerable for most hæmatocèles) was present in the cases in which it was not found out, than to attribute the latter cases to a condition about which we know absolutely nothing, and which is quite hypothetical.

Cestan's views as to the practice to be followed seem to me very judicious. When internal bleeding is actually going on, the object of the operation is to stop it; and this cannot—at least with the means we have at present—be done with safety and certainty unless we see the bleeding part. But, *when bleeding has ceased*, the object of operation is not to stop hæmorrhage; it is to prevent recurrence of hæmorrhage, to prevent suppuration, possibly to cure pressure symptoms. The way to effect this is to remove the clotted blood and the ovum. As bleeding has stopped, there is no danger of great hæmorrhage during the operation. The vaginal route is, I think, the best way of doing this.

It may be said, Is not this going back to the practice which Bernutz, Nélaton, and others followed, and abandoned because its results were bad? I think not. The practice here advocated differs in two ways from that of those who first opened pelvic hæmatocèles.

First, and perhaps greatest, we have the advantage of asepsis and antisepsis. Secondly, what is now recommended is not merely opening the pouch of Douglas and letting out the blood; it is removing also the pregnancy. Open Douglas's pouch with an incision big enough to admit the fingers; scoop out the clot. When the cavity is apparently empty, grasp the uterus bimanually between the hand in the peritoneum and the hand on the hypogastrium. You have now a landmark. Trace outward by touch the tube and ovary on each side. You will have no difficulty in recognising the one that is dilated. There is probably a tubal mole. By pressure with the fingers squeeze this out and remove it, leaving the tube empty. The bleeding accompanying this will only be slight oozing. This is the practice that I have followed, with results that seem to me better than those of opening the abdomen.

4. The treatment of pelvic suppuration.

Thirty years ago the title of this article would have been understood as synonymous with pelvic cellulitis. The only pelvic abscesses that doctors then knew anything about were those in the cellular tissue, which pointed generally above Poupart's ligament, sometimes in other places.

The surgical treatment of pelvic suppuration then consisted in the opening of such abscesses when they had pointed. There may be to-day, and certainly there were a few years ago, physicians of high repute whose idea of the proper treatment of pelvic suppuration was limited to this. But if we assume that they are too conservative, that surgery has gone beyond this, it is still difficult to define the better treatment.

Progress was begun by Lawson Tait. This surgeon repeatedly opened the abdomen for conditions which at that time other surgeons would have thought could not have derived from such an operation benefit in proportion to the risk. The result of his tentative operations was to show that many inflamed lumps in the pelvis, which most people at that time would have diagnosed either as pelvic cellulitis or pelvic peritonitis, were abscesses in the Fallopian tubes or ovaries, which could be cured by taking away the diseased parts. When this was successfully done, the immediate results were found to be brilliant. Patients who had been chronic invalids for years were restored to activity and comparative health. Operators all over the civilised world rushed to follow Tait, and found the immediate results to be what Tait had described. For a time the only ground on which the propriety of such operations was questioned was the risk to life involved in them. This risk seemed to be greater than that of the chronic diseases for which the operation was done. The importance acquired by the surgical aspect of the question drew the attention of morbid anatomists to inflammation of the Fallopian tubes; and it was found that this disease directly or indirectly caused death far more often than had been supposed. Tait's service was great in showing the true nature of these inflamed lumps in the pelvis, and in pointing out at least one way in which they might be cured.

In England it is very difficult to trace the after-history of patients, especially of hospital patients. The closer police supervision of the population which is carried out on the Continent makes it easier to do so there. Tait did not follow out, or at least did not publish, the after-history of his cases. Other people in this country met with patients whom Tait or his followers had treated by operation. Continental operators followed up their

cases for years. It was found that, brilliant as were the immediate results, in many cases, after the lapse of a few months or years, the inflammation recurred. In others, disagreeable consequences, in the shape of incisional hernias, and suppurating sinuses discharging for months until a ligature had come away, followed the operations. So that, apart from the risk to life involved in what is rightly known as "Tait's operation" (that is, the removal by abdominal incision of inflamed Fallopian tubes and ovaries), it was far from being a certain and permanent cure, even in those cases in which the state of the parts removed was such that the operation might justly be said to have saved life.

The explanation of the recurrence of inflammation seemed obvious. The original inflammation had been set up by the entry of micro-organisms through the vagina. The recurrent inflammation was due either to micro-organisms remaining in the stump of the tube, or to fresh organisms again introduced from without. Inflammation is a protective process. The inflamed area is the field of battle between the leucocytes and the micro-organisms. If we could provide for the escape of inflammatory products and prevent the access of fresh micro-organisms, and if the leucocytes were able to vanquish those that had already invaded the body, we might safely trust the powers of nature to effect a permanent cure. If we could do what was required by the vagina, all the troubles contingent upon a scar in the belly-wall would be prevented.

Such was the reasoning which led to the next step in the treatment of pelvic suppuration. As the micro-organisms get in through the uterus the avenue of entrance for micro-organisms can be closed by removing this organ—a useless one if the ovaries are incapable of function. The big wound made by removing the uterus enables the surgeon to get at every collection of pus in the pelvis and empty it. This done, pus will freely flow away by the vagina, abscess cavities will heal by granulation, and in the end a firm cicatrix will protect the pelvic viscera from repeated inoculation, and a scar in the belly-wall will be done away with.

This mode of treatment was introduced by Péan, aided by his pupil Ségond. What success has followed it, or would follow it if extensively practised by surgeons of small experience in pelvic surgery, we know not. At the International Congress of Gynæcology the discussion on this operation was too hot to permit the dry light of science to shine. Speakers talked about wounds of the bladder, the bowel, ureters, etc. It is certain that in France, the land of its birth, this method of treating pelvic suppuration is not yet accepted as the proper treatment for every

case. Up to 1892 operators who were not content to wait until an abscess pointed had to choose between these two things.

The next step was obvious. If the source of trouble is in the tubes and ovaries, why leave them perhaps to get well, perhaps give further trouble? If they are diseased, and the uterus is gone, they are useless organs; then why leave them? German operators therefore proceeded to remove by the vagina the uterus, tubes and ovaries. Thus a clean sweep was made of the diseased parts, and yet the patient was not left with a weak spot in the belly-wall. From *à priori* considerations we should expect this operation, if successful, to be a complete and permanent cure of all symptoms that directly depend upon the inflammation. The objection to it is that it is an extensive mutilation which is attended with some risk, and can hardly be held as necessary until it is quite certain that the disease has irreparably damaged the parts. This grave objection has led to efforts to find ways of giving relief not involving such serious consequences.

Before passing to these, it should be mentioned that some American surgeons perform hysterectomy by the abdominal method with such confidence that they prefer to extirpate the uterus with its appendages by this route rather than by the vagina.

One great merit of Péan's proposal lay in its provision for drainage. Its disadvantages were the difficulty and danger of removing the uterus, and that it involved a mutilation which might be unnecessary. It occurred to many that the drainage might be had without the mutilation, and without the risk of hysterectomy. Of late years much has been done in endeavouring to define the indications for incising pus cavities by the vagina, and the best way of doing it.

This was one of the principal subjects of discussion at the recent International Congress of Gynæcology and Obstetrics. The general tenor of the discussion was to bring out that the best results will be attained by proper selection of cases. Different speakers tried to define in what cases particular methods were the best to use; but there was not such unity of opinion as to enable me to say that the question is settled by common consent. To represent the state of opinion and practice at present I will quote and comment upon three speakers, representing France, America, and Germany. Bouilly of Paris divided cases of pelvic suppuration into four groups: (a) Abscess in the cellular tissue; (b) suppuration in the tubes or ovaries; (c) abscess primarily in the peritoneum; (d) suppuration in more than one place, or having burst through the skin

or into a mucous tract. This is a clear and logical classification. Bouilly then proceeds to define the application of these different modes of treatment.

Puncture he rejects, except for diagnosis. I think it should be rejected absolutely.

Mere incision followed by drainage Bouilly thinks the right thing in the following cases :—

- (a) Acute abscesses in the cellular tissue.
- (b) Primary suppuration in the peritoneum, whether septic or gonorrhœal.
- (c) Suppurated hæmatoceles.
- (d) Encysted suppuration of the ovaries or tubes when the cavity is unilateral, thin-walled, easily fluctuating, and low down.

The cases that best offer these indications are acute ovarian or tubal suppuration. This “expectant operation,” as Bouilly terms it, gives excellent immediate results and final cure much oftener than might be supposed; and if it be followed by a permanent fistula or recurrent suppuration, more radical treatment can afterwards be carried out.

Bouilly does not regard laparotomy and vaginal hysterectomy as rival measures which oppose or supplant one another. Each is suitable for certain cases.

Laparotomy.—If the patient is young, and there is any doubt as to the lesion being bilateral, laparotomy, which allows the operator to examine the opposite side, should be chosen. In case of doubt as to the nature of the lesion, whether a dermoid, an ovarian cyst, a suppurated tube, or an extra-uterine gestation, laparotomy should be done. If the disease is bilateral, its situation determines the choice. If the sac is high up, near the fundus uteri, and far enough away from the vagina and cervix uteri to allow the uterus some freedom of movement, laparotomy should be chosen: for here the sac is abdominal rather than pelvic. Vaginal hysterectomy is the best treatment of pelvic suppurations, with these three exceptions—cases, viz., in which the sac is (a) unilateral; (b) of doubtful nature; (c) high up.

Hysterectomy.—Bouilly urges hysterectomy for the following reasons: He says it will accomplish all that laparotomy would—that is, the removal of the suppurated tubes or ovaries; and it allows the cure of lesions, against which laparotomy is either powerless or too dangerous. When pus is contained in cavities formed by the matting of uterine appendages with neighbouring parts, and shut off from the main peritoneal cavity by solid fibrous

adhesions, the attempt at enucleation by laparotomy is dangerous, for sight is powerless; but by vaginal hysterectomy these cavities can be opened and drained. It is the method for large adherent sacs, complicated or not by fistulæ. It cures chronic suppuration of cellular tissue better than any other method. The ablation of the uterus is an ideal drainage, whereby the pus cavities are emptied, cleaned and dried. In most cases the operation remains merely evacuating. Insisting on the extirpation of the sac removes from the operation its simplicity and benignity, and implies failure to recognise the principal rôle of the operation. In simple cases hysterectomy is as successful as laparotomy; in dangerous cases more successful. Some laparotomists, Bouilly adds, are coming to recognise the advantages of hysterectomy, and perform it through the abdomen. Thus performed, it ensures perfect drainage, prevents after-troubles that might come if the uterus were left *in situ*, and the troubles following cessation of menstruation seem to be less after removal of the uterus with its appendages than after removal of the appendages only. On the whole, says Bouilly, in cases not curable by incision, vaginal hysterectomy is the most excellent method of treatment in pelvic suppurations, laparotomy being only indicated in the exceptional cases specified.

Bouilly's exposition commends itself to my judgment in everything except one, which is implied rather than expressed. I agree with him as to the advantages of incision and drainage. I agree also with his specification of certain exceptional cases that are better dealt with by abdominal section. But I do not think that vaginal hysterectomy for pelvic suppuration is indicated anything like so often as, from his enthusiasm, I infer that Bouilly would resort to it. But as he gives no figures, it is possible that I may be assuming an implication that does not necessarily follow.

I shall refer at another place to the question of removal of the uterus *versus* removal of the uterus and appendages.

Howard Kelly, whose position as Professor of Gynæcology in the Johns Hopkins University gives authority to what he says, was less happy. He gave four indications for puncture *per vaginam*: (1) Dense inflammatory masses lateral or posterior to uterus in close contact with vaginal fornix, or walled off from general peritoneal cavity by adhesions. [If the words, "in close contact with vaginal fornix," be omitted, this would include almost every case of pelvic suppuration.] (2) Old inflammatory cases in which a fistulous tract opens into rectum, bladder, or anterior abdominal wall. [I should have thought these just the

cases that called for some more radical treatment. When there is already one sinus which will not close, it does not seem to me a hopeful line of treatment to make another.] (3) Hydrosalpinx of large size where the tube can be reached with safety through the vaginal fornix. [The adjective "large" is indefinite. Every large hydrosalpinx that I have seen or read about has been removed by abdominal section under the idea that it was an ovarian tumour. I know not how to distinguish between a large hydrosalpinx and an ovarian tumour. Could it be done, I agree with Kelly that puncture would be enough.] (4) Encysted pelvic peritonitis. [This is vague. If the effusion is serous, I think puncture is unnecessary; if purulent, it is not sufficient.] Kelly then specifies the advantages, which are, briefly, that the dangers and after-effects of spaying are avoided. The dangers of puncture, he says, are hæmorrhage, perforation of bowel, escape of pus into peritoneal cavity. [Cases in which a puncture entails such risk, I should have thought, were better either let alone, or treated in a more radical way; and, evidently, so does Kelly, for farther on he gives the avoidance of these accidents as reasons for abdominal section.] Kelly defines the cases not likely to be relieved by puncture: those in which there is dense indurated tissue, the result of cellulitis extending out to the pelvic walls, pressing upon nerves, blood-vessels, and ureters; and those in which there is an inflammatory stricture of rectum. [This is tolerably obvious.]

The next heading in Kelly's communication is "Cases in which Vaginal Puncture is of the Greatest Value." His view is that its greatest use is in the young, in whom the diseased organs should not be removed till all other means have failed. The next part of the paper I pass over, as it concerns operative detail, merely noting that Kelly first opens the abdomen, to see the exact condition of things, and then punctures by the vagina. This entails the risk of incisional hernia and of peritonitis. Kelly then passes from the subject of "puncture *per vaginam*" to *conservative operative treatment*. Under this head he says:— (1) "Free pus tubes, from their adhesions, push down into *cul-de-sac* and puncture." [This proceeding seems to me to involve all the risk of Tait's operation with much less prospect of benefit.] (2) Excision of one tube and of one ovary of the opposite side. Then he speaks of *salpingo-oöphorectomy*, or, as it is called in England, Tait's operation. The indication for this to him is simple pyosalpinx. If there are isolated purulent foci in the cornu uteri, he recommends excision of this. [Since conservative abdominal surgery has just been spoken of, I am at a loss to understand

why for "simple pyosalpinx" he removes the ovary; nor are criteria given by which to judge whether to remove the pus tube, or push it down and tap it.] Lastly, we come to *hystero-salpingo-oöphorectomy*, which Kelly does by the abdomen. The suitable cases in his view are:—(1) Simple double pyosalpinx not accessible to vaginal puncture. (2) Densely adherent pyosalpinx with associated metritis and purulent endometritis. (3) Pelvic abscess associated with appendicitis. [That a patient should lose her internal genital organs because her vermiform appendix is diseased is certainly new practice.] (4) Pelvic abscess associated with adhesions partially obstructing the small intestine. (5) Pelvic abscess in which there is a fistulous track leading into sigmoid flexure, or into small intestine. (6) Pelvic abscess associated with myoma.

Howard Kelly is an able representative of a school who seem to think that the dangers of abdominal section are now abolished and need not be taken into account in choosing treatment. In England these dangers still exist, and therefore, as well as for the reasons already given, I do not find Kelly's paper a helpful one.

Before passing to the contribution of Säger, I may quote another American paper which, as I think, represents a healthier as well as more scientific tone of practice.

5. The surgical treatment of suppuration of the uterine appendages.

In the "Year-Book" for 1895, I referred to the work of Polk, of New York, in the direction of what was called the conservative treatment of inflammation of the uterine appendages. Polk then advocated the free opening of the abdomen in cases of pelvic peritonitis, and the practice of surgical treatment of inflamed uterine appendages short of their complete removal; breaking down adhesions; opening closed tubes; scraping of the mucous membrane of inflamed tubes; removal of part of an inflamed tube, or of an inflamed tube without the ovary; puncture of ovarian cysts, or removal of part of an ovary. In quoting this, I remarked on the enormous number of abdominal sections that would be done if this practice were generally followed, and on the want of evidence that these operations did good. Polk's practice since then seems to have undergone a radical change. His newer views are put forward in a paper published in the *Amer. Gynec. and Obstet. Journ.* (January, 1896). The term "suppurative disease of the uterine appendages" Polk understands in a broad sense. He includes pyosalpinx and ovarian abscesses with their accompanying pockets of pus, when such exist; also gonorrhœal, tuberculous, and septic endometritis

and metritis. He believes that one of these lies at the back of every collection of pus in tube or ovary. In these conditions, if resolution of the inflammation could be relied upon, there would be little, if any, need for interference; but it cannot be relied upon, and its failure means destruction of the appendages and perhaps death. "Therefore," says Polk, "shall we stand idly by and await the unfavourable issue?" Polk holds not. After mentioning the prophylactic and medical treatment, he comes to the question of what is to be done when pelvic suppuration has already taken place. "Analogy teaches that the quicker we get to a suppurating centre and, by giving vent, free the tissues from the destructive influence of the pathogenic germs and fluids there at work, the better for the involved area." In most cases the affected area involves the pouch of Douglas. Hence the best way of meeting the immediate danger—that of extension of inflammation to the general peritoneal cavity—is to make a free opening into Douglas's pouch. "This opening not only gives vent to peritoneal fluids, but it permits us to palpate the under surface of the affected appendage or appendages, so that, if best, they too may be incised or aspirated." [I should add that Polk assumes that prior to this the uterus has been curetted and packed with antiseptic gauze.] When the appendages are explored, the disease may be found unilateral—the parts on one side healthy, on the other a tube distended with pus, its ovary infiltrated, enlarged, softened, and perhaps containing pus. Here the indication is to remove the diseased appendage, either through Douglas's pouch or by anterior colpotomy. Supposing that on both sides the appendages are diseased, or supposing the disease is found to be tuberculous, then the "only logical course" is the removal of the uterus and appendages by the vagina. If there is suppuration that is pointing, either by vagina or abdominal wall, the sound practice is to open it where it is pointing. When the suppuration is primarily in the ovaries, "hysterotomy," with enucleation of the purulent tubes and ovaries, must be done. Shall it be by vaginal or abdominal section? Polk's preference is for the vaginal route. Partiality in this matter has grown into conviction. If abdominal section is done, the uterus should be removed along with the tubes and ovaries.

This paper of Polk's was read before the Philadelphia Obstetrical Society, and provoked a very animated discussion. Parvin expressed his general agreement with Polk, mainly on the ground of the excellent results he had seen in Berlin. He was quite sure that the views of Polk, if not accepted now, ultimately would be. Both Parvin and Ashurst, who followed him, said that the

occurrence of hernia after abdominal section was far more frequent than was generally supposed. **Noble Baldy, J. Price, and M. Price** advocated the abdominal operation, their arguments being that some surgeons who have removed diseased appendages by the vagina have left parts behind [as if bits were never left behind after abdominal section] and, broadly speaking, do not know what they are doing. [These abdominal surgeons spoke as if hernia never followed their operations. No surgeon ought to say this, for there is no lapse of time after which a patient is safe from an "incisional hernia."] **Massey** seems to me to have gone to the root of the matter. He said that the question of vast importance was the diagnosis of purulent disease. "The majority of cases of suppurative disease operated upon have no pus. They have had pus at one time, but they have none when operated upon." "The majority of cases operated upon do not have encysted pus that demands operation." "Hardly a week passes," says Massey, "that I do not see cases which are advised to be operated on." "Almost invariably these cases get well without operation." "The question is not alone, therefore, whether in the operation we shall select a certain method, but whether an operation shall be performed at all, and this cannot be decided until we refrain from operations on tubes and ovaries which are particularly easy because of the slight disease present."

Sänger contributed an elaborate paper, not only stating his own views, but also the opinions of many others obtained by letter. His general conclusion is the following:—The time is past when one single method can assert itself to be the only true one. All methods have their justification; and to-day we have to decide for what special cases each method is the best. **Sänger** lays down as the principles of German gynæcology: (1) Strict indications for operation. (2) Intervention as conservative as possible. (3) Choice of operation depends upon bacteriological, clinical, and anatomical diagnosis. As to different methods of treatment—

(1) Puncture. This should be limited to old abscesses, or pus in cystic cavities, when the pus is sterile and can be reached without opening the general peritoneal cavity.

(2) Incision. This applies to cellutic abscesses, and to abscesses in the peritoneum which are generally in Douglas's pouch. It is best done by incising the vagina with the thermo-cautery and opening the pus collection with dressing forceps. Irrigating or stuffing with gauze are superfluous, although they may be called for during the after-treatment.

Incision is to be chosen in chronic single pus sacs in which the pus is almost always sterile, and in certain acute cases, such as free

abscesses in Douglas's pouch and suppurating hæmatoceles ; but in the latter cases it is to be recommended only if symptoms of general peritonitis occur at the same time ; if that is absent, it is better to operate by abdominal section. Incision through the vagina can now replace hysterectomy, with or without removal of the uterine appendages. The method of vaginal incision is open to improvement in the future.

Abdominal section is indicated for purulent collections whose size amounts to real tumours, and for suppurated cysts or other growths. Suppurated organs must be entirely removed.

The recognition of the harmful influence of premature extirpation of ovaries, or of complete extirpation of the whole internal generative organs, has led to vaginal and abdominal conservative operations. The treatment of all the symptoms often arising from these mutilations, by feeding the patient with ovarian tissues and giving hypodermic injections of ovarian juice, is being put to the test ; but better than this is to save all that can be preserved of uterine and ovarian tissue.

The vaginal extirpation of a normal uterus, when this extirpation is only a preparatory means allowing the appendages to be reached, must be entirely discarded.

Sänger discusses at length various points of operative technique : drainage, forceps *v.* ligatures, etc.

The general tenor of the papers and discussion is, I think, to show that the tendency is to lessen the frequency of removal of the uterus and its appendages for inflammatory disease, and to substitute vaginal for abdominal operations. To me it seems likely that Martin's operation of anterior colpotomy will greatly modify our proceedings. In pelvic peritonitis the vesico-uterine fold of peritoneum is a part little apt to become adherent or thickened. When there are dense adhesions behind the uterus there are often none in front. The peritoneum can easily be opened here and the parts behind the uterus explored.

Some of these speakers seem to me to assume a precision of diagnosis that can only be attained in exceptional cases. Thus, in a patient with a fixed inflammatory lump in one quarter of the pelvis, by what criteria can anyone say whether there is one suppurating cavity or more than one ?

The extraordinary number of the operations in the practice of some gentlemen makes me think that they hardly give nature fair play. The cases of pelvic peritonitis that get well under expectant treatment form the majority ; those that require operation a small minority.

When we have a case which does not get well under expectant

treatment, in my opinion the proper treatment depends upon the size and position of the tumour. A swelling low down behind the uterus should be treated by incision from the vagina in the posterior fornix. When the mucous membrane has been cut through, the inflamed tissues can generally be broken down with the fingers and pus liberated.

If there is a small fixed, persistently painful lump at one side of the uterus, not in Douglas's pouch, but higher up, it can be got at by anterior colpotomy. If it is an inflamed tube and ovary, adhesions can be broken down and the tube and ovary brought out for inspection, and removed if diseased. If the lump is movable, and not larger than a hen's egg, it can be brought out in this way, examined, and, if necessary, removed.

If there is a large swelling rising into the abdomen, abdominal incision is required to deal with it safely.

If there are intra-pelvic lumps on both sides of the pelvis, they can be explored by anterior colpotomy; and if, when this is done, both ovaries are found suppurated, the best thing will be to remove completely the uterus and its appendages. This operation, after the appendages have been freed from adhesions, is not so difficult as the removal of a cancerous uterus, because the operator can cut as close as he likes to the uterus, and the uterine tissue is not friable. The breaking down of adhesions and the liberation of the tubes and ovaries are no more difficult nor dangerous by the vagina than by the abdomen. The removal of the uterus ensures the complete removal of the source of mischief and free drainage. But this measure should be a last resource, not to be advised till expectant treatment has been fully tried.

6. Deciduoma malignum.

If a new name means a new disease, one has recently been discovered and given the above name. Of course the disease is not new. Cases must have often occurred before the last few years. But it is only lately that a group of pathological phenomena has been described under the name of "deciduoma malignum," and its peculiar and distinctive clinical history and morbid anatomy mapped out and defined.

Ruge has placed before the Berlin Obstetrical Society a very complete account of it. The following is the broad clinical picture of the disease with which he opens his paper. The symptoms date directly from an abortion or labour. Continuous bleeding excites suspicion that a piece of membrane or placenta has been left behind. Removal of fragments, large or small, only checks the bleeding for a short time. Renewed hæmorrhage and, between the bleedings, discharge, first watery, then purulent, finally

offensive, call for renewed treatment. Anæmia and weakness added to these symptoms suggest that the disease is malignant; and malignancy is proved by the occurrence of secondary growth in the vagina, the lungs, and other places. The patient dies soon, sometimes unexpectedly, from the effects of rapidly-developing malignant disease of the uterus.

The characteristic feature of the disease is that the malignant growth develops in the decidua which is its matrix. Hence the name "*deciduoma malignum*." **Gottschalk** has described another form of new growth precisely similar in its clinical history, but differing from it in being a degeneration of chorionic villi. This should therefore be styled "*chorio-deciduoma malignum*." Both new growths are sarcomatous in type: the one (*deciduoma*) springs from maternal tissue, the other (*chorio-deciduoma*) from foetal tissue. The characteristic feature of both is that the growth is an immediate sequel of delivery or abortion. Ruge criticises in detail the hitherto published cases of this disease. He points out that in some cases described as instances of this disease a long interval had elapsed between delivery or abortion and the onset of symptoms; and in one there had been neither delivery nor abortion. He urges that the term *deciduoma malignum* should be restricted to cases directly following pregnancy. It is difficult to say when the morbid process begins, whether during pregnancy or after delivery.

Veit holds that in such patients sarcoma was present before pregnancy, and has grown faster under the stimulus of pregnancy. If this view be correct, it would seem—from the rarity of sarcoma of the uterus and the number of published cases of *deciduoma*—as if sarcoma of the uterus favoured the occurrence of pregnancy and the sarcomatous tissue was especially suitable for the placental site. In support of his view, Veit urges that malignant disease of the uterus is in its earliest stage without symptoms.

Turning to the clinical aspect of the disease, Ruge remarks that some of the published cases show an unnecessary and injurious postponement of proper treatment: a fault doubtless explained by our very recent acquaintance with this disease. When a patient has symptoms which may indicate *deciduoma*, one of two courses is indicated. One is to dilate the cervix and digitally explore the uterus; the other to scrape away bits of tissue by the curette for microscopic examination, without previous dilatation of the cervix. Ruge points out that after dilatation and digital exploration the curette may still be needed for diagnosis, and that dilatation of the cervix is not in these cases without risk; he therefore

holds that the use of the curette without dilatation is safer, simpler, and "more elegant." Ætiologically, there is a striking connection between deciduoma malignum and myxoma of the chorion. Out of thirteen cases, in seven the chorion was myxomatous. Ruge thinks there is no evidence that deciduoma grows at the placental site; nor is he quite satisfied that it grows from the decidua. It is a tumour of sarcomatous type, and he thus expresses his view of its relation to the decidua: "A decidual cell does not directly become a sarcomatous cell; sarcomatous cells, probably as a sequel of pregnancy, or especially easily during pregnancy, are often decidua-like." Neither does he accept Gottschalk's view that the growth is a degeneration of chorionic villi, on the grounds—(1) That at the early period of pregnancy after which this disease has been known to arise chorionic villi do not sufficiently penetrate the decidua to be left behind after abortion; (2) still less after the uterine cavity has been scraped, and deciduoma has recurred after this operation. Villi were no doubt present in the growths examined by Gottschalk, but not chorionic villi. Ruge agrees with Veit that the disease is a sarcoma of the uterine wall which was probably present before pregnancy. He says there is no sign by which a decidual cell can be distinguished from a sarcoma cell of the same size and shape. In an appendix to his paper he quotes with approval a paper of Marchand's, which convinces him that deciduoma at least sometimes originates, not from the decidua, nor the connective tissue of the chorionic villi, but from the epithelium of the chorionic villi.

These different views as to the origin of these growths do not affect the clinical history. The important point for the practitioner to learn is that a mass in a recently delivered uterus which feels like a bit of retained placenta may be a malignant new growth that can only be properly treated by the removal of the uterus.

Whitridge Williams (*Johns Hopkins Hosp. Reports*, vol. iv., No. 9) publishes a summary of the literature of this condition up to date, and a case observed by himself, which in its clinical history resembled those published by German observers under this name. In his case he thinks there is ample ground for concluding that the tumour is "not made up of decidual tissue," nor does he think it derived from chorion. He thinks it an epithelial tumour of maternal origin. He points out that the cases described under the term "deciduoma malignum" differ very materially among themselves, as is sufficiently evidenced by the names given to them. But in spite of their differences in anatomical structure, these tumours form a distinct clinical group. They all follow

closely upon some form of pregnancy, either abortion, full-term pregnancy, or myxoma of chorion, and they all quickly lead to the death of the patient, with the very rapid formation of metastases, especially in the lungs and vagina. They all present the same hæmorrhagic structure, and in their gross appearance resemble placental tissue. Therefore such tumours should be grouped together under a distinctive name, and Whitridge Williams thinks "*deciduoma malignum*" (originally proposed by Säger) is the one best suited for the purpose. There is no doubt that they are more frequent than is generally supposed, many having been observed and described as forms of cancer or sarcoma. Williams enumerates twenty-five cases published as deciduoma before the writing of his article. The ætiology of this condition is unknown. The striking fact about the cases is their close relation to some form of pregnancy, and that out of the number, eleven followed pregnancy with myxoma of the chorion. Bearing in mind how uncommon the latter disease is, it is difficult to resist the conclusion that there is a causal relation between myxoma of chorion and deciduoma. Säger divided the cases into two classes, according to whether they followed myxoma of chorion or not; but Whitridge Williams is unable to trace any particular difference between the two classes. Unlike ordinary forms of cancer, the vast majority of deciduomata occur in young women. The most constant symptom is bleeding, the uterus is enlarged, and its cavity filled with a soft, reddish, placenta-like mass, which sometimes extends almost through the entire thickness of the uterus. The growth recurs rapidly after removal. Rapid formation of metastases and early death are the characteristic features of this form of tumour. Vaginal metastases are remarkably frequent; they were present in 58 per cent. of the hitherto recorded cases, although they are rare in ordinary uterine cancer, and it is difficult to explain their production. Death usually occurs within six months.

It is evident that the only hope of successful treatment lies in the early extirpation of the uterus. Therefore, when a patient has hæmorrhage late in the puerperium (*especially if the chorion were myxomatous*), the uterus should be curetted and the products removed and carefully examined, so that if malignant change is found, the uterus may be promptly removed. So far, seven cases have been thus treated. In three the growth recurred; in the others enough time has not elapsed for the reporter to judge. The outlook of operative treatment is therefore not hopeful; but it is the patient's only chance.

The subject was discussed at the April meeting of the

Obstetrical Society of London, when cases were reported to the Society by **Malcolm**, **Rutherford Morison**, and **Herbert Spencer**. **Eden** read an able criticism of the work hitherto published relating to the question, and **Kanthack**, **Clarence Webster**, **Doran**, and **Bland Sutton** took part in the discussion. The points at issue are three: First, as to the name. "Deciduoma" implies that the growth springs from decidua. There seems to be no good reason for supposing that this is the fact. If, then, a name implying a wrong pathology should be rejected, this name should be. But I think the first object of a name is to denote a thing, not to describe it; and if the thing denoted is clearly understood by those who use the name, it matters little whether the name might imply something else to other people. Deciduoma is now understood to mean a certain rare but definite group of cases; and as such it has a distinct use and value, and should, in my opinion, be retained, although it may not correctly describe the cases. Secondly, as to the origin of the growths. Most of the speakers agreed in thinking that the tumours were sarcomata; that the histological changes found in the deciduomata, which were supposed to be peculiar and characteristic, were such as were found in sarcomata elsewhere; that deciduoma was nothing but sarcoma possibly modified by the vascularity of the parts incident to pregnancy. One feature on which stress has been laid as indicating an origin for these tumours different from that of the tumours hitherto known to occur in the uterus is the presence in them of "syncytium"—a recently invented name for isolated multinucleated masses of large cells such as are seen in the placenta and have been thought to be derived from the decidua. **Eden** and **Clarence Webster** both expressed the opinion that the "syncytium" in the placenta was derived not from the decidua, but from the foetal epiblast. **Kanthack** has found precisely similar tissue in sarcomata. **Bland Sutton** went the nearest to accepting "deciduoma" as a correct name, for he held the disease to be sarcoma developing in decidual tissue. I do not see why it is necessary to suppose this. We cannot understand pregnancy with cancer of the body of the uterus, because this disease involves the mucous lining of the organ, the part upon which the progress of pregnancy depends. But a sarcoma might develop in the muscular tissue without producing any change in the endometrium considerable enough to interfere with pregnancy, and then, under the influence of the puerperal contractions of the uterus, be forced towards the cavity and come to project into it.

Lastly, the practical aspect. There can, I think, be no doubt

that these various communications have brought out the fact that there is a form of malignant disease not hitherto recognised, marked by the facts (1) that it immediately follows labour or abortion; (2) that it is especially apt to follow pregnancy with myxomatous degeneration of the chorion; (3) that secondary growths in other organs occur earlier and oftener than in any other form of malignant disease affecting the uterus. We know not the reason for these peculiarities. These cases, in the beginning, resemble cases of retained placenta. Therefore, any piece looking like a bit of retained placenta removed from a uterus which bleeds after delivery should be examined microscopically, and if its structure is sarcomatous, the uterus should be removed without delay. This was done in Rutherford Morison's case; but the disease recurred elsewhere in four months, and death took place in seven months. The diagnosis by the microscope may not always be possible; in Spencer's case the bits that came away were taken for "putrid" placenta; and therefore probably, if examined, their structure would not have been distinguishable. But the attempt should be made.

7. Endometritis.

In last year's "Year-Book" I remarked on the confusion that exists in the use of the word "endometritis." There are three quite different conditions commonly denoted by this term: (1) An adenomatous growth of the endometrium. This causes bleeding and discharge, weakens the patient by making her anæmic, but does not cause peritonitis. (2) An inflammation caused by microbic infection, which tends to spread along the Fallopian tubes to the peritoneum. This causes symptoms so slight that it is hardly ever diagnosed until the inflammation has reached the peritoneum. (3) An atrophy of the endometrium is sometimes found in old women who bleed. To my mind there is no good evidence that the atrophy is the result of inflammation or the cause of bleeding.

I quote a paper in which these different changes are carefully studied, though I cannot say that experience has brought me to the same conclusions as the writer of it.

A. Pinkuss (*Zeit. für Geb. und Gyn.*, Bd. xxxiii.) contributes a paper based on the microscopical examination of fragments of the endometrium removed with the curette in 115 cases. He divides the morbid changes met with into four principal groups:—

(1) Twenty-four cases marked by increase in number and size of the glands of the endometrium.

(2) Seventeen cases in which there was infiltration with round cells as well as glandular overgrowth.

(3) Thirty-seven cases in which infiltration with round cells was the chief change, the endometrium in other respects seeming normal.

(4) Thirty-seven cases in which the endometrium showed atrophic changes.

The clinical generalisations which Pinkuss draws from his investigation of these cases are the following :—(1) There are pathological processes of the mucosa uteri that have nothing to do with true inflammation, but are caused by indirect irritation, and are characterised by *glandular hypertrophy*. As the glands are the essential part of the uterine mucosa, we may describe this as a functional formative disturbance of the parenchyma. Its chief symptoms are dysmenorrhœa and leucorrhœa. It follows definite ætiological conditions. In the opinion of Pinkuss, these are conditions affecting the sexual function : either of a psychical kind, such as disappointments in love, etc. ; or physical, such as masturbation, marriage to an impotent husband, “coitus interruptus,” certain ovarian conditions. His reason for holding this opinion is the large proportion among the cases of this disease in which one of the causes specified had been present. He thinks that irritation of the sexual organs stimulates a trophic centre which influences the nutrition of the ovaries and the endometrium. Deficient development of the uterus renders it more liable to this disease. (2) In contrast to this stands true inflammation of the endometrium—*interstitial endometritis*. This is directly caused by infection from without, such as septic infection after delivery, gonorrhœa, etc. ; indirectly by conditions which render the uterus more vulnerable to infection, such as subinvolution, retention of membrane, prolapse. The chief symptoms of this kind of endometritis are hæmorrhage and purulent discharge. (3) Advanced interstitial endometritis that has led to *atrophy* is characterised by a typical copious hæmorrhage without leucorrhœa. All forms may lead to pain, a consequence of pelvic peritonitis which may be eventually produced, not true dysmenorrhœal pain. All forms are associated with sterility and abortion. But in this respect things run in a vicious circle ; abortion and certain causes of sterility produce endometritis, and probably endometritis produces sterility and abortion. It is difficult to say where the chain of events begins.

8. Cysts of the vagina.

Zweigmaum (*Mon. für Geb. und Gyn.*, January, 1896) has published three cases of this kind, prefacing them with a full summary of the different ways in which these cysts have been proved, or supposed, to originate. Although small vaginal cysts

often exist without giving trouble, and are only found out accidentally on the *post-mortem* table, yet such cysts may cause troublesome symptoms. Among these are tenesmus in defæcation and micturition, leucorrhœa, dyspareunia, even hindrance to delivery. Further, a vaginal cyst often simulates prolapse. As they can be cured by operation, a study of their natural history is not a profitless task. Our knowledge about them is very recent. **Kleinwächter**, who published a monograph on the subject in 1889, collected 176 cases, but only twenty-eight of these had been well examined.

The chief theories about their origin are the following :—(1) **Rokitansky**, **Scanzoni**, and **Förster** supposed that they originated in the cellular tissue outside the vagina. (2) **Veit** was the first to suggest that they might be formed out of the remains of the Wolffian ducts known as the “ducts of Gärtner.” (3) **Kaltenbach** and **Mayer** believed that they had traced the formation of these cysts, beginning with heaping up of cells in the submucous tissue, then formation of spaces in these cell masses without definite wall, then fusion of these spaces, and conversion of the cells at the periphery into pavement epithelium. (4) **Klebs** thought that vaginal cysts were dilated lymphatic vessels. (5) **Eustache**, **Tillaux**, **Thalinger**, and **Thorn** thought they were traumatic hygromata or “*bursæ serosæ*.” (6) **Freund** saw in them relics of double vagina; in other words, persistence of the duct of Müller. (7) Lastly, **Preuschen** regarded them as retention cysts formed in glands present in the vagina.

The theories which at present find most adherents are those of **Veit** and **Preuschen**. The reason why **Preuschen**'s view is not universally accepted is that so many observers have looked in vain for glands in the vagina. But other equally competent investigators have found them; and in such a matter positive evidence must outweigh negative. No less an authority than **Virchow** has pointed out the analogy of vaginal cysts with the “*ovula Nabothi*” of the cervix uteri. **Veit**, who denies the existence of true glands in the vagina, will have it that the sulci between the vaginal rugæ really perform the function of glands; that they are involutions of glandular tissue, secrete as glands do, and may cause retention cysts by union of adjacent papillæ.

The persistence of the Wolffian ducts, as the ducts of Gärtner, has now been demonstrated many times, both in animals and in the human subject. An important communication illustrating this was put before the Obstetrical Society of London in 1894 by **Amand Routh**. In his case a cyst in the vagina communicated with one in the broad ligament, the whole cavity being evidently a

dilated duct of Gärtner. The diagnostic mark of a cyst formed out of Gärtner's duct is its extending above the vagina into the broad ligament. It is, of course, possible that the vaginal part only of Gärtner's duct may be dilated, and then the nature of the cyst can only be matter of conjecture.

Many ways of treating these cysts have been employed. Puncture or incision, with or without cauterisation and drainage, has been used; but after such treatment it is always likely that the opening will heal and the cyst refill. The right treatment is either to cut away all the wall of the cyst that projects above the vagina, and stitch what is left to the vagina all round, after which the exposed cyst wall becomes similar in structure to the vagina: or else to lift up the cyst, clamp its base with pressure forceps, and cut it away. Which alternative is to be preferred obviously depends upon the size and relations of the cyst. If this be on the anterior wall, great care must be taken not to injure the ureter or urethra. A full bibliography is appended to Zweigbaum's paper.

9. Simple round or corroding ulcer of the vagina.

There are certain rare cases of ulceration of the vagina for which no cause can be discovered, and the healing of which no treatment seems able to effect, or at least which are very little influenced by treatment. These cases are so rare that we know very little about them. For that reason I quote a paper which is one of the few monographs devoted to these cases.

Beuttner (*Monat. für Geb. und Gyn.*, February, 1896) has collected some cases of the above disease and added to them two of his own. I have in the heading of this paragraph placed first the name adopted by the author I have quoted. The disease is known in England by the second name, which is that employed by Dr. John Clarke and Sir Charles Clarke, and later by Sir John Williams, who have given the best descriptions of the disease when it affects the uterus. Beuttner does not seem to be acquainted with the paper of Sir J. Williams, although he refers to the writings of the Clarkes. The cases collected by Beuttner all occurred in women of advanced age. He attributes the ulcer to deficient blood supply in consequence of sclerotic thickening from endarteritis of the vaginal arteries—a view of the pathology of the disease which was also put forward by Sir J. Williams. The sclerosis, he holds, not only lessens the quantity of blood going to the part, but prevents the establishment of any collateral circulation. The typical seat of these ulcers is the posterior vaginal fornix, approaching more or less the external os. There are often ecchymoses present besides the ulcer. In one of Beuttner's cases there was also an ulcer of the duodenum, a

disease which he thinks has a similar pathology. The ulcer of the vagina may cause no symptoms beyond discharge, or it may produce much pain. Whether it does so or not depends upon the age and nervous temperament of the patient. The ulcer when seen in the beginning looks like a brown stain with a depressed centre. Later it is a deep cylindrical loss of substance. Its margin is formed of vascular connective tissue; its base of connective tissue infiltrated with round cells, and smooth muscular fibres undergoing fatty degeneration. The epithelium in the neighbourhood of the ulcer is normal. There may be more than one ulcer, or two ulcers may unite and so form a purse-shaped ulcer. The differential diagnosis from syphilis lies in the absence of any marginal induration and absence of benefit from specific treatment. From cancer the points are that cancer very seldom begins as an ulcer of the vagina: it gradually advances and forms a tumour projecting into the vagina, or a diffuse infiltration of the mucous membrane. The treatment consists in attention to the general health, and cleanliness, which is attained by the use of alkaline vaginal injections. With such treatment Beuttner says the ulcer may heal. Although some of the cases he quotes have been held by their narrators to be identical with Clarke's corroding ulcer, yet Beuttner doubts whether his own were really of the same kind. In Clarke's cases the ulcer was on the cervix, and there was wasting and hæmorrhage—features not present in Beuttner's cases.

10. Fibroids and sterility.

It is always a good thing to have error refuted, whether the subject be of great or little importance. There is no subject in gynæcology about which so much traditional error exists as sterility; for this subject had never been scientifically investigated until Matthews Duncan made it the subject of his Gulstonian lectures.

One of the traditional errors, copied from book to book, is that uterine fibroids cause sterility. In last year's "Year-Book" I quoted a paper by Hofmeier in which that physician examined this question. Another German investigator has tested it by his experience. Both agree in finding no good reason to set down fibroids as a cause of sterility.

Kleinwächter (*Zeit. für Geb. und Gyn.*, Bd. xxxii.) has been stimulated by Hofmeier's paper ("Year-Book," 1896, p. 309) to analyse his own case-books in order to find how far his experience agreed or differed from that of Hofmeier. He has examined his records of 184 cases of uterine fibro-myomata. His conclusion is that Hofmeier has done a service in upsetting a false teaching

which has for decades been copied from book to book. If a woman has a fibroid, and is sterile or has aborted, it does not follow that the fibroid is the cause of her sterility or abortion. He agrees with Hofmeier that fibroids have not the influence in producing sterility or abortion that has been attributed to them. But he is unable to follow Hofmeier's further statement, that these new growths are only exceptionally a dangerous complication of pregnancy, labour, and childbed; that they only require patience, care in antiseptics, and avoidance of hurry in the third stage of labour. Out of nine cases of pregnancy and labour observed by Kleinwächter, two aborted with much hæmorrhage, in two others there was great—in one fatal—hæmorrhage, and in one, symptoms of peritonitis.

Kleinwächter, in an important paper on the causes and treatment of sterility, has given more complete information than any other author that I know, as to the results of treatment for sterility. He has analysed 648 cases. These formed 15 per cent. of the gynæcological cases under his care; 90 per cent. of them were Jewesses. Kleinwächter gives reasons, which I need not quote, as they are of local interest only, for thinking that an unusual number of sterile women sought his advice, and that in a larger proportion of them than usual the sterility was the husband's fault. Duncan estimated that about 10 per cent. of marriages were sterile; so that Kleinwächter's opinion as to the exceptional nature of his practice is probably correct.

He divides his cases into nineteen groups. The first three comprise *developmental defects* of the female organs: (1) Gross defects of uterus, fifteen cases; (2) of vagina, six cases; and (3) smallness of uterus, 116 cases. In all, 137 cases out of 648. This gives 21 per cent., or about a fifth of cases of sterility due to defects of development.

These are just the cases that persons who write books to say that they can cure sterility like to get hold of, because they give a reason for a long course of treatment to make the uterus develop. But I know of no such writer who has published the results of his treatment. Kleinwächter treated five of his cases of small uterus by electricity. In one it made menstruation more copious; in none did it remove sterility.

In a laborious statistical paper read to the Obstetrical Society of London many years ago by Sir John Williams, that physician showed the influence of imperfect development of the uterus in causing dysmenorrhœa. In connection with this, it is interesting to observe that in 45 per cent. of Kleinwächter's cases of small uteri menstruation was painful.

The next groups embrace those which have been most welcome to those who try to cure sterility. Group 4, *conical elongation of the vaginal portion*, contains forty-seven cases, and nine others occur in other groups, making fifty-six cases. Kleinwächter does not regard this shape of the cervix as a cause of sterility, because he has known women who had it become pregnant without any treatment. Nor is it always accompanied with cervical catarrh, nor always with dysmenorrhœa. But under certain circumstances Kleinwächter thinks it may cause sterility, for in one case, after six years of sterile marriage, pregnancy followed division of the cervix. Dysmenorrhœa was present in the majority, thirty-four out of forty-seven, or 72 per cent.

In group 5 Kleinwächter found thirty-six cases, in which *stenosis of the external os* was the only abnormal condition; and there were twenty-seven others in which it was complicated with other conditions. Of the thirty-six, dysmenorrhœa was present in 69·5 per cent. Kleinwächter does not state what degree of narrowing he thought important enough to include in these figures. Even with this qualification his figures are better evidence in favour of the occasional production of dysmenorrhœa by these malformations of the cervix than has yet been put before the profession.

Of *displacements*—retroversion, retroflexion, lateriversion, the uterus being movable—there were eighty-two cases, and fifty-three others occurred in other groups; in all 135, or 21 per cent. of the total number of sterile women. Kleinwächter does not regard the displacement as a disease of the uterus, but as part of a general weakness or malnutrition from which the uterus gets softened, and therefore sinks or bends. Three patients with retroflexion became pregnant after treatment which remedied other conditions.

Forty-seven of the eighty-two suffered from *dysmenorrhœa*, or 57 per cent. I pass by Kleinwächter's numerical summary of the less frequent local diseases that he found: endometritis, gonorrhœa, chronic metritis, ovarian tumours, etc. Many of his patients probably consulted him not for sterility, but for some local disease which gave trouble, but had nothing to do with their sterility. I note next that in 138 cases Kleinwächter could find nothing wrong with the women, and in thirty of these, or 21 per cent., there was good reason to believe that the fault was in the patient's husband—a proportion very close to the estimate of male sterility given by Gross, and quoted by Duncan, which was one in six.

Duncan showed in what a large proportion of premature marriages sterility followed, and Kleinwächter finds the same

thing. Out of his 648 cases, 494 were married before the age of twenty-one, or 76 per cent. In eight cases Kleinwächter dilated the cervical canal. In one pregnancy followed three years later. In fifty-one cases the vaginal portion was divided. In only one case, that in which the cervix was elongated, did pregnancy follow. In two cases this operation was followed by pelvic inflammation. Kleinwächter has therefore given up this operation as a means of curing sterility. He regards it as proper to aid the removal of a submucous fibroid if the os uteri is very small. In ten out of the fifty-one cases dysmenorrhœa persisted after as before the operation. Out of the 648 cases, in only eight was sterility cured by treatment. These eight comprise two cases of vaginismus, one of division of the vaginal portion, one of dilatation, one in which gastric catarrh was cured, one with cervical catarrh, and two in which the husband was treated. In twelve others pregnancy took place, but not as a result of treatment. Out of the whole number, 50·7 per cent. suffered from dysmenorrhœa. Kleinwächter says that sterility is often caused by disease and congenital peculiarities which have dysmenorrhœa as their natural accompaniment. In his view sterility has nothing to do with dysmenorrhœa.

I state Kleinwächter's opinion, although I think that there can be no question of the relation between dysmenorrhœa and sterility. I may state broadly my opinion, which is that, overlooking rare and exceptional cases, the cure of sterility resolves itself into one of two things—curing spasmodic dysmenorrhœa, and removing impediments to complete sexual intercourse. Cases cured in other ways than these are very rare.

11. The formation of adhesions after abdominal section.

On the question whether when a second ovariectomy becomes necessary some time after one ovary has been removed, the second operation is likely to be more difficult and more dangerous than the first, a paper by **Dr. Byron Robinson**, of Chicago, throws much light. If, at the second operation, we might expect to find the remaining ovary as freely movable as it was at the first opening of the belly, then obviously the second operation will be as easy and as safe as the first. But if the parts are likely to be adherent, then the removal of the second ovary will be neither as simple nor as safe as the removal of the first.

Dr. Byron Robinson tells us (*American Gynecological and Obstetrical Journal*, 1895, p. 605) that if a hundred dogs have operations performed within the belly, and are killed within from two to six weeks after operation, peritoneal adhesions will be

found in seventy-five of them. He has opened the belly seven times in the human subject after abdominal section, and each time found adhesions. In a case in which I performed Cæsarean section on account of cancer of the cervix, the patient recovered without a symptom of peritonitis, and died six months afterwards from the cancer. A *post-mortem* examination showed the uterus adherent by a thick band to the anterior abdominal wall. This specimen is in the museum of the Royal College of Surgeons. In another case in which I removed a pyosalpinx of tuberculous origin, leaving the ovary and the ovary and tube on the opposite side, the patient's troubles persisted, and a second operation had to be done. The recovery from the first operation had been uneventful. But at the second operation extensive peritoneal adhesions were found. I therefore accept Byron Robinson's statement as to the great frequency of adhesions after operations ending in what seems perfect recovery.

MIDWIFERY.

BY M. HANDFIELD-JONES, M.D. LOND.,

Obstetric Physician to St. Mary's Hospital, and Lecturer on Midwifery and Diseases of Women to St. Mary's Medical School.

I.—PHYSIOLOGY.

1. The care of pregnant women.

Pinard (*Gaz. des Hôpitaux*, November 28, 1895) finds that it is very important that women should be kept at rest towards the end of pregnancy. Hard work is an evil both for the existing citizen (the mother) and the future citizen (the child). He has compared the cases of women who seek relief at a lying-in hospital usually after the first pain at least has come on with the cases of women carefully nursed in a refuge for the pregnant. The average weight of the lying-in hospital children was 3,010 gr.; that of the children born after the mothers had been at least ten days in a refuge was 3,290 gr. Preliminary rest was found to have a particularly good influence on the duration of labour. Out of 1,000 women who worked till labour began, only 482 were delivered on or after the 280th day of gestation. On the other hand, 660 of the women who had rested were delivered at or after the same date.

2. "Notes on the variation in height of the fundus uteri above the symphysis during the puerperium" is the title of a paper read by W. S. A. Griffith and T. G. Stevens at a meeting of the Obstetrical Society of London on October 2, 1895. The paper demonstrated the importance of recording by measurement "charts of involution" during the puerperium. The method of measurement was first described, with the precautions necessary to avoid errors, and the method of recording the measurements on the ordinary temperature charts. The measurement is the height of the middle of the fundus above the symphysis.

The sources of error are: (1) distension of the bladder; (2) distension of the rectum; (3) distension of the small intestines; (4) prolapse of the uterus; (5) abnormally high uterus; (6) unusual bulk of uterine muscle; (7) retroversion of the uterus;

and (8) excessive lateral obliquity of the uterus. The pathological conditions which interfere with the involution of the uterus, and therefore with the descent of the fundus, are: (1) retention of portions of placenta and membranes and of blood-clots and lochia; and (2) putrid decomposition within the uterus. (There had been no septic cases to study at Queen Charlotte's Lying-in Hospital, where the observations were made.) Charts illustrating normal involution and its variations and pathological conditions were given, and their value in indicating, even before any rise in temperature had occurred, the presence of putrid decomposition.

3. Sufficiency of milk after birth.

Buchmann (*Centralb. f. Gynäk.*, No. 25, 1896) observed 126 women in the obstetrical wards of the Halle Clinic from February to May, 1895. He wished to ascertain the proportion of cases in which the mother was able to suckle her child. Out of the 126 cases, 83 (or 65·9 per cent.) had sufficient milk when discharged between the tenth and the twelfth day. The percentages recently reported from Bâle and Stuttgart were much lower. More statistics of this kind are called for, as they throw much light on the health and strength of women in different regions.

4. Intra-uterine photography.

Pinard (*Bull. de l'Acad. de Méd.*, No. 10, 1896) reported as the first intra-uterine use of Röntgen rays an experiment carried out by Varnier and Chappuis on the uterus of a woman who died of pernicious anæmia in December, 1894, being then three months and a half pregnant. The specimen had been frozen, divided by two sagittal cuts, and preserved in spirit, and the surfaces were accurately adjusted and secured by rubber bands. The cavity of the uterus appeared clear in the centre of the photograph, the outline of the specimen was distinct, and the inequalities of the thickness of the muscular walls could in parts be detected; the picture was crossed by two light vertical lines, the lines of section, and two dark horizontal bars representing the rubber rings. At the upper and right side of the cavity the foetus could be seen lying head downwards, and extending from the fundus to within about 4 cm. of the lowest part of the inferior segment; the head was flexed on the thorax, and completely in profile, but the ribs and spinal column, which came out very black, showed that the trunk lay obliquely to the right and backwards. The outline of the neck, occiput, vertex, and forehead was well marked; that of the nose, mouth, and chin not so distinct. Near the elbow of one of the arms, flexed with the

hand on the forehead, two parallel dark bands indicated the radius and ulna, and the lower part of one thigh with the knee and lower leg and the dark shadow of the femur were quite evident. Both walls of the gravid uterus, the bladder, placenta, rectum, and fatty tissue had proved more permeable to the X rays than the rubber bands, 0·5 mm. in thickness, and in the photograph shown the fœtus and its position were more distinctly seen than through the unbroken membranes of an aborted ovum. It is probable that the uterine wall will be as easily traversed by the X rays when recent and full of blood as when hardened in alcohol, and that the position and attitude of the fœtus can thus be ascertained in *post-mortem* specimens without freezing, and so interfering with their microscopical examination.

P. Davis (*Amer. Jour. Med. Science*, March, 1896) records attempts to skiagraph a fœtus of eight months and a half *in utero*; the first with a lead diaphragm and one hour's exposure gave no result; the second, with an eclipse plate, no diaphragm, and seventy-five minutes' exposure, gave a faint outline of the fœtus, the darker shadow of the pelvis being upwards and to the right. There was no outline of the skeleton, and the skull was hidden by the pelvis. Neither mother nor child was affected by the rays.

5. The effects of lactation on menstruation and impregnation.

Leonard Remfry (*Lancet*, January 11, 1896) has made notes on several hundred cases with the view of elucidating the above point. He came to the conclusion that: of suckling women (1) 57 per cent. only have absolute amenorrhœa; (2) 43 per cent. menstruate more or less, but 20 per cent. have absolute regularity; (3) impregnation does not take place so readily during lactation as at other times, but this is not true to such an extent as has been thought; (4) if absolute amenorrhœa is present during lactation the chances of impregnation occurring are only six out of 100; (5) if menstruation occurs during lactation, the chances of impregnation are sixty in 100; (6) the more regular a woman is during lactation, the more likely is she to become pregnant; (7) during a menstruating lactation the changes in the uterus are presumably similar to those connected with the ordinary monthly periods; and (8) in the woman who does not suckle at all the menses appear as a rule some time in the first six weeks after delivery.

6. The influence of inheritance on the tendency to have twins.

Robert Cory (*Lancet*, November 2, 1895) published a table of

Number.	Date of birth of twins.	Age of mother last birthday.	Birth-day of mother.	Number of children, including twins.	Twins' sex.		Whether inheritance is on the mother's or father's side.	Condition of placenta.	Nearest relative who has had twins.
1	1894.	—	—	—	F.	F.	Father.	—	Father's grandmother.
2	—	—	—	—	F.	F.	Father.	—	Father's mother.
3	—	—	—	—	M.	M.	Mother.	—	Mother's grandmother.
4	—	—	—	—	F.	F.	Father.	—	Father's grandmother.
5	—	—	—	—	M.	M.	No history.	—	—
6	—	—	—	—	F.	F.	Mother.	—	—
7	—	—	—	—	M.	M.	Mother.	—	Mother's grandmother.
8	Aug. 29, 1894.	41	Jan. 7.	—	M.	M.	No history.	—	—
9	—	—	—	—	M.	M.	No history.	—	—
10	—	36	May 23.	—	M.	M.	Both sides.	—	First cousin of mother and grandmother of father.
11	July 31, 1895.	25	Feb. 6.	7	M.	F.	Mother.	—	Mother's mother.
12	Sept. 8, 1895.	26	June 2.	6	F.	F.	Mother.	Single; twosacs.	Mother's aunt.
13	1895.	19	—	—	M.	M.	Mother.	—	Mother's grandfather was a twin.
14	—	—	—	9	F.	F.	Mother.	One placenta; two sacs.	Mother's sister.
15	Oct. 10, 1895.	25	March 20.	—	M.	M.	Mother.	Double.	Mother.
16	Oct. 12.	36	Oct. 1.	4	M.	M.	No history.	Single; one sac.	—
17	Oct. 20.	26	Aug. 14.	5	M.	M.	Father.	Single; twosacs.	Father's maternal aunt.

seventeen cases of twin births. He says that the tendency to have twins may come either from the maternal or from the paternal side. Of these seventeen cases there is a history of twins to be obtained in thirteen, or 76·47 per cent. In eight cases the inheritance came from the maternal side only, in four cases from the paternal side only. In four cases there was no history to be obtained. In one case there was a history on both sides. When the inheritance comes from the father's side the twins seem to be of the same sex, as far as these observations go. On the previous page is a table of the cases.

II.—PATHOLOGY.

1. *Deciduoma malignum.* (See also pp. 303–8.)

In the *Bristol Med. Chir. Journ.* for June, 1896, Walter C. Swayne gives an excellent summary of what has been written about the condition described under various names, but generally designated “*deciduoma malignum.*” He says that the chief characteristics may be briefly stated as follows:—

A pathological condition following expulsion of the products of conception, marked by rapid development of new growth in the uterus, generally, it is supposed, at the placental site, producing uterine hæmorrhages, foetid discharge, enlargement of the uterus, and metastatic deposits in other organs. Its clinical characters are chiefly: a close relation to pregnancy, especially to molar pregnancy; occurrence of hæmorrhages and foul discharges, owing to the formation of a friable growth resembling placental *débris*; rapid deterioration of health; and finally, the formation of metastases. The hæmorrhage is usually intermittent, severe, and occurs in gushes, indicating the opening of a vessel. The uterus is enlarged, but its cavity is filled, and the contents are friable and easily removed, leaving a cavity in the wall of the uterus. Vaginal metastases are common.

Pathologists differ much in their opinion as to the nature of the growth in these cases; some observers name it cellular sarcoma, others are of opinion that it is of epithelial nature.

Swayne says that clinically the following definite statements can be made: (1) that a form of malignant disease of the uterus hitherto unrecognised has been differentiated; (2) the presence of syncytial masses of protoplasm is a striking feature of several of these tumours, as (3) is also the similarity between these masses and the chorionic epithelium.

In the cases now on record one prominent fact is the number of cases which occur in connection with hydatid mole. The course

of the disease is rapid, and it ends fatally if not interrupted by proper surgical treatment. The practical conclusions to be drawn from the cases reported appear to be that, in any case where hæmorrhage occurs in connection with the puerperal state, or after the puerperal period, more especially in cases of hydatid mole, the necessity for exploration of the uterus after dilatation of the cervix must be remembered; that after exploration a careful microscopic examination of any tissue removed should be made; and that treatment to be effectual must be radical and employed without delay.

Swayne in conclusion notes that the general tenour of the debate at the Obstetrical Society of London—which is the first important debate on the subject, at any rate in England—seemed to be: (1) that the plasmodial masses were not necessarily syncytial, but were found in ordinary rapid-growing sarcomata; (2) that syncytial masses could not be identified with accuracy merely from microscopic appearances; (3) that quite possibly many of the cases were sarcomata or carcinomatous growths stimulated by or developed soon after pregnancy, but not necessarily connected with the products of conception; (4) that it was yet too soon to add a new disease to the list.

A large number of cases are now on record, of which the great majority have been reported from the continent of Europe. Few cases have been observed in England.

J. Whitridge Williams (*Johns Hopkins Hospital Reports*, vol. iv., No. 9) reports a case of “deciduoma malignum.” The patient was a negress thirty-five years of age. She had had five pregnancies. In her last confinement the labour was slow, but otherwise normal. The puerperium was not entirely normal, the temperature remaining at about 100° F., and she felt very much prostrated. A fortnight afterwards a painful nodule appeared on the right labium majus, which gradually increased in size and ulcerated, until it became a large sloughing mass, which occupied nearly the whole of the right labium and the adjacent tissue, and in the centre of which there was a large fistulous opening into the rectum. Death ensued in about three months from septicæmia. At the necropsy, in addition to the local mass, the left lung was seen to be occupied by a large number of irregularly shaped round or oval nodules varying in size from that of a pea to a walnut. They were greyish-red in colour; some presented soft, greyish areas in their centre. They easily broke down under the finger, were readily enucleated from the surrounding lung substance, and closely resembled placental tissue in appearance. The right lung was likewise studded with a large number of

similar nodules. The heart was normal. The liver presented numerous hæmorrhagic nodules. The spleen was enlarged and contained several small metastases. In the kidneys were several dark-red hæmorrhagic areas. Williams details a most careful microscopic research, of which the following is a summary : He had to deal with a remarkable new growth. The greater part of the original tumour, as well as the metastases, was made up of blood, which was either free in the tissues, or enclosed within cavities formed by the tumour-cells, whilst its cellular part was composed of large elements, some of which appeared as epithelial cells (?), and others as larger or smaller protoplasmic masses or syncytium. Nowhere in the tumour could any trace of blood-vessels or reticulum be discovered, and it appeared to be solely composed of epithelial cells (?) and masses of syncytium, which were grouped together with apparently no attempt at tissue formation, but which lay free in areas of hæmorrhage without integral connection with the surrounding tissues. The metastases presented the same characteristics, and appeared to be thrombotic or embolic masses of cells which multiplied in the vessels and caused their rupture, with consequent hæmorrhage into the surrounding tissue. In these hæmorrhagic areas the cells would seem to have lived on and multiplied until they formed masses too large to be nourished simply by osmosis, when they underwent necrotic changes.

J. Neumann (*Wien. klin. Woch.*, July 2, 1896) writes on the general aspect of the disease. The first symptom, he says, is, in the majority of cases, menorrhagia coming on at a most variable period after parturition; this is usually profuse, and since it is due to the opening up of vessels by the growth of a tumour, is not, as a rule, amenable to ordinary hæmostatic treatment. The patient soon becomes anæmic and cachectic, and the tumour increases in size with greater or less rapidity. Metastases appear in the vagina, but may be removed, in many cases with permanent recovery; if, however, foci are established in the lungs, hæmoptysis occurs with a rapidly-fatal issue. Infection takes place through the blood stream. The history of an untreated case is that of an extraordinary malignant uterine tumour leading to metastases through the blood stream, severe anæmia, cachexia, and death. If the patient is to be saved, the diagnosis must be made early, and depends upon the history, the hæmorrhage, the enlargement of the uterus, and the detection of a tumour within it; the disease can, at this period, be absolutely diagnosed only by the detection of the typical deciduoma tissue in a scraping. It must be remembered that any pregnancy may be the starting-point of a

malignant deciduoma, and the corollary is that every puerperal woman requires medical attention until the flow of blood from the uterus has permanently ceased. Microscopically, Neumann adheres to the views laid down in his book on the subject, that both syncytial and ectoderm cells enter into the formation of the tumour. The former spread mainly between the muscle fibres, but the latter take on the characters of a typical epitheliomatous growth; both kinds of cells are intimately bound together, and both spread into the blood-vessels. Hence a malignant deciduoma belongs histologically to the carcinomata, but pathologically to the sarcomata, exhibiting, however, sufficient deviation in its mode of growth to warrant its being placed in a special class. The recent researches of Mertens show that while the syncytium arises from the uterine epithelium, Langhans' layer is derived from the foetal ectoderm, and we have, therefore, the extraordinary circumstance of foetal elements proliferating in the maternal organism, which Neumann considers the most interesting discovery, from the scientific point of view, which the study of the subject has so far elicited.

Apfelstedt and Aschoff (*Archiv f. Gynäk.*, vol. l., part 3, 1896) record two cases of this disease, which they think should be rather called "chorioma malignum," on histological grounds. The first patient, aged thirty-three, aborted at the fourth month on October 4, 1894. The membranes were passed unruptured. As usual in these cases, severe uterine hæmorrhages followed the miscarriage. On February 5, 1895, a mass was removed from the uterus; as the membranes had been discharged entire it could not have been a placental polypus. On May 17, the patient being worse, the curette was used. The masses removed were found to be sarcoma deciduo-cellulare. On May 24 the uterus was removed by Runge. The patient died on the twenty-sixth day. The uterus contained a malignant deciduoma, and there were metastatic deposits in both lungs and in the liver, pancreas, mesentery, intestines, and in the cancellous tissue of the head of one femur. The second patient was forty-two years of age, and was delivered of a vesicular mole on March 21, 1895. The left labium became swollen, and the swelling extended up the vagina. It was laid open on June 19, when tissue exactly resembling a vesicular mole was found growing from its walls. On June 20 similar masses were removed from the uterine cavity. Pyæmia, originating in suppuration in the cavity laid open in the labium, caused the death of the patient on July 25. Metastatic deposits were found in lungs and spleen.

Fraenkel (*Archiv f. Gynäk.*, vol. xlix., part 3, 1895) writes on

hydatidiform mole and malignant deciduoma. Undoubtedly they are frequently associated. Small portions of a mole of this class usually remain behind after the greater part has been expelled. The superficial epithelial layer (syncytium) of the chorionic villi proliferates considerably when a vesicular mole develops. It is precisely from this abnormal development of epithelium that the cancerous change known as deciduoma malignum is evolved. The deeper cellular investment of the chorionic villi (Langhans' layer) takes no primary part, according to Fraenkel, in the development either of the mole or of the cancer.

At the meetings of the Obstetrical Society of London on April 1 and May 6, 1896, the notes of three cases of malignant deciduoma were given; and **Eden** read a paper on the subject, which was followed by a most important discussion. **Herbert Spencer** gave the full history of a case which he believed to be the first observed in Great Britain. The patient was a Danish woman twenty-seven years of age. The first symptom of the disease—passage of masses of the growth—occurred twenty-eight days after a normal labour, her second, which was followed by a normal puerperium. Subsequently there was a foetid discharge of masses of growth and of blood, and the disease ran a septic course, terminating fatally within ten and a half weeks of delivery. At the necropsy an ulcerated and gangrenous growth was found at the placental site, the ulceration and gangrene having nearly perforated the fundus uteri. Secondary growths were also found in the cervix and in the lungs, but nowhere else in the body. The growth in all three situations was similar, and was characteristic of deciduoma malignum, being apparently a large-celled sarcoma with the typical syncytium. The necessity of early diagnosis and treatment by vaginal hysterectomy was pointed out.

Eden referred to the number of cases of malignant uterine growth occurring subsequently to gestation that have recently been recorded, mostly by German observers. The most important cases were those of **Sänger**, **Gottschalk**, **Marchand**, and **Whitridge Williams**. **Sänger** introduced the term "deciduoma malignum." He thought that in his case the tumour arose in the decidua and was composed largely of so-called "decidual cells." Eden believed that cells precisely like those found by **Sänger** occurred in the uterus under various conditions, and did not prove the origin of the growth in the decidua. **Gottschalk** believed that in his case the growth arose from a "sarcomatous transformation" of the stroma of retained chorionic villi. **Whitridge Williams's** case possessed the general characters of a sarcoma; tumours were present in the uterus, vagina, and vulva, and it was not clear

which was the primary growth. He relied for his diagnosis upon the presence in the tumours of plasmodial masses, which he believed to be syncytial in origin. Marchand records two cases, in both of which he found similar syncytial masses; he also claimed to have found cells derived from the foetal ectoderm. In one case, represented as a tubal gestation in a girl aged seventeen years, there was no anatomical evidence of pregnancy discovered. The tubal mass may therefore have been a primary malignant growth. Eden believed that plasmodia, not unlike those figured by Williams and Marchand as syncytial masses, were frequently found in sarcomatous growths in other parts of the body, and doubted whether there was sufficient evidence to justify the view that they arose from placental relics. The case recorded by Mayer was referred to, in which there seemed to be proof of the origin of a malignant growth in retained myxomatous villi (hydatidiform mole).

Kanthack agreed in all essential points with Eden's criticism. It was necessary to approach a question like this from the point of view, not of the specialist, but of the general pathologist. It was evident that the "deciduoma" is a malignant tumour. All are agreed upon that point; but some traced its origin to decidual cells, others to syncytial masses, and at least one other authority even to the connective tissue of the chorionic villi. On analysing the published accounts it would be found that, according to their nature, these deciduomata were either sarcomata, in which case they were said to be developed from the decidual cells, or carcinomata having their origin in the syncytium. It was evident, then, that "deciduoma," apart from its hybrid nature, was a bad term, because it was not inclusive. He himself firmly believed that the deciduoma was a typical sarcoma, characterised by features common to many forms of sarcoma. It was certain that most of the deciduomata described or shown were sarcomata. He agreed with Eden that Whitridge Williams's specimen was an undoubted sarcoma and certainly not a carcinoma. Spencer had described his case as a deciduoma consisting chiefly of syncytial masses, and he had laid great stress on the growth in the lungs. The latter was secondary to the uterine growth and certainly a sarcoma, and not even an extraordinary sarcoma. The uterine growths were curious, but presented nothing incompatible with sarcomata met with in other regions of the body. Rutherford Morison's case no one could consider anything else than a sarcoma, containing in certain situations large plasmodial cells (syncytial masses). Hebb's specimen was also acknowledged to be a sarcoma, the secondary growths in the lungs showing the so-called syncytial

masses. The plasmodial syncytial masses are said to be characterised by these three points: (a) Absence of cell outline; (b) deeply staining nuclei; and (c) vacuolation. Now he (Kanthack) maintained that similar plasmodial masses formed by cell-fusion occurred in many rapidly-growing sarcomata, and that it was illegitimate to argue from morphological analogy that these plasmodial masses are derived from syncytium. Some writers had described their specimens as sarcoma developed from decidual cells. The latter were connective-tissue cells changed under the unknown proliferative stimulus of pregnancy. As Eden had well said, the decidual cell was not characteristic of pregnancy. It was necessary before calling a large-celled sarcoma a deciduoma that (1) pregnancy must rigorously be proved to have existed (this condition had remained unfulfilled in many cases); and (2) the pregnancy must have existed before the sarcoma appeared.

Clarence Webster (Edinburgh) said that, as he had seen no specimens of the so-called deciduoma malignum save those shown by Rutherford Morison and Spencer, he felt justified in limiting his remarks to certain points which he had noticed in his perusal of various published cases, referring in particular to some embryological considerations in which he was particularly interested. Like many others in England, he had been much surprised at the appearance of this new term. That the disease was of malignant nature seemed evident; apart from the novelty of the name, he did not think there was anything in the clinical symptoms which had not before been recognised in cases of primary malignant disease of the uterus. Nor was the connection of malignancy with pregnancy or the puerperium anything unknown. The startling element in the new disease seemed to him to be in the pathology and the ætiology of the condition, or rather in the discordant views expressed by the writers. Thus the following statements are made as to the nature of the new growths—namely, that it is sarcomatous, that it is carcinomatous, and that it is made up of both sarcomatous and carcinomatous tissue. As to the tissue of origin of the new growth, the following are mentioned:—(1) Maternal: epithelial elements of mucosa, connective-tissue elements of mucosa, and muscle of uterine wall. (2) Fœtal: epiblastic elements of villi, mesoblastic elements of villi, and combined epiblastic and mesoblastic elements of villi; and (3) maternal and fœtal elements combined. Taking together all the cases that have been published from the microscopical appearances described, three distinct types are to be made out:—(1) In some the tumour and metastases are composed of cells sarcomatous or carcino-

matous in shape; (2) others are composed of cells, as in (1), along with masses of plasmodial tissue like the syncytium, found normally in connection with the placenta; and (3) others are made up of the above constituents with the addition of villous structures exactly resembling the villi of the placenta as they are found normally, or in the condition known as vesicular mole. The nature of the syncytium of pregnancy has long been discussed. Lane states that it is formed from the epithelium of the uterine mucosa; others that it is a foetal structure epiblastic in nature—the outermost layer, in fact, of the early ovum. The foetal origin cannot now be denied. It has been clearly pointed out in different mammals, especially by Van Beneden and Hubrecht. The maternal origin of the syncytium was advocated in the days when there was no such careful technique in microscopy as is found at the present day. If it can be established that the syncytium found in connection with these malignant growths is the same as that of pregnancy, and if it be also found in metastatic growths, it must be admitted that, whatever be the origin of the other cells in the tumour, the syncytial part is due to the malignant development of foetal epiblast, parasitic in the uterine mucosa, resulting from the product of conception. However, another question is to be settled before such a conclusion is to be formed—viz. to what extent does plasmodial formation take place in connection with the growth of sarcomata entirely unconnected with the influence of pregnancy? Kanthack states that this change is fairly common in sarcomata of different tissues of the body. This is an important point to establish in order to discredit a belief in the development of these tumours in the uterus from the syncytium of pregnancy.

W. E. Fothergill (Manchester) said that most of the points in the pathology and literature of the subject on which he had any definite opinion had been referred to by Kanthack and Webster, with whom he completely agreed. He would like, however, to put in a broad and simple way the points in question. Of the twenty-eight or twenty-nine writers with whose work he was acquainted, few agreed in opinion, and still fewer used the same nomenclature. Some of them did not make it clear what they meant by cancer and sarcoma, and others did not even make any definite distinction between mother and foetus. There are doubtless four tissues from which it is logically possible that the growths in question can arise—viz. from connective and epithelial tissue of the maternal decidua, and from the epithelial and connective tissue of the chorion. Now malignant new growths arising from

the decidual cells (connective tissue) are sarcomata, and those arising from decidual epithelium are carcinomata (epitheliomata or adenomata, as the case may be). Whether caused by pregnancy or any other circumstance, most of the growths described are one or other of these, or a mixture of both. There is no excuse for applying a new name to these, and the only result of their publication should be to attract attention to pregnancy as a factor somewhat overlooked in the causation of malignant change in the uterus. But if it can be proved that foetal epithelium or epiblast can live and grow within the maternal tissues, we doubtless have to do with a new pathological entity. Marchand raises hopes of a simplification when he says that all the forms recently described and variously named are derived from epithelium, but in another place he plunges again into confusion by dividing this epithelium into two kinds—syncytium and the epiblast of the chorion. One observer only—Gottschalk—has stated that the foetal connective tissue is concerned in the growth under discussion. The question at issue appears to be : Can foetal epiblast—call it syncytium or what you will—form new growths in the uterus and produce metastatic growths elsewhere? At present there is no proof that this can occur. When it is found, the new “chorionic carcinoma” will be welcomed, but not before. When it is recognised, it certainly will not be under the deceptive and unnecessary misnomer “deciduoma malignum.”

Bland Sutton said that his own views of this question were simple. He was of opinion that a deciduoma is a sarcoma arising in decidual tissue. Concerning other varieties supposed to originate in chorionic villi, he preferred to maintain an attitude of active scepticism. Their occurrence was possible, but their existence had not as yet been satisfactorily demonstrated.

Alban Doran said that certain authorities seemed assured that there was a true deciduoma malignum, but they had not calculated the chance of coincidence of simple sarcoma which occurred in young women with gestation. Yet Apfelstedt and Aschoff recently found vesicular mole tissue forming a secondary deposit in the labium three months after the expulsion of the mole from the uterus. Decidual tissue was hardly more complicated; its diffusion by metastasis was therefore conceivable. There had, on the other hand, been too much eagerness to make out decidual tissue in primary and secondary deposits. Thus, in the *Centralblatt für Gynäkologie* of May 2nd last two cases of deciduoma were reported. The patients were of the ages of thirty-eight and forty-two years respectively. Epithelioma was far more probable in both instances. The first case was described as

epithelial cancer over twenty years ago, so that to re-classify it as a deciduoma was hardly scientific. In the second, the uterus was removed nearly two years after the expulsion of a vesicular mole, and there were no secondary deposits. The Society could not admit that the existence of deciduoma malignum as distinct from sarcoma stimulated by gestation had been proved.

Spencer thought that whether the disease belonged to the sarcomata or the carcinomata was a matter of slight importance ; so also was the name by which it was designated. The really important question was whether they had to deal with an ordinary malignant growth in the uterus, or whether they had to do with a malignant growth which developed from the products of conception (foetal or maternal). He thought all the facts were in favour of this latter view.

Eden said, in conclusion, that the question of the identity of the plasmodial masses found in cases of deciduoma malignum with the placental syncytium depended upon one point—viz. whether the placental syncytium possessed any specific characters by which it could be distinguished from masses of nucleated protoplasm derived from different sources. He believed that it did not possess any such characters, and considered therefore that the plasmodial masses found in these growths could not be identified as syncytium merely from their microscopical appearances. If experience should prove that malignant growths consisting of proliferating placental villi may arise in the uterus and spread by the ordinary channels of metastasis, such tumours would form a distinct addition to pathology. It was obvious, however, that the term “deciduoma malignum” was quite an unsuitable designation for new growths composed of placental villi.

2. Influenza in pregnant women.

Müller (*Munch. med. Woch.*, October 8, 1895) discusses the effects of influenza on pregnancy in twenty-one cases that have come under his observation. Of these, two were near the end of pregnancy, one in the eighth month, one in the sixth, and the remaining seventeen in the first to the fifth month. Of these last seventeen, abortion occurred in thirteen. Of the remaining four, the pregnancy was uninterrupted in one, miscarriage was undoubtedly due to the influenza in another, but in the other two it was impossible to state positively the relation of the influenza to the delivery. In the case in which pregnancy was uninterrupted, abortion had occurred during an attack of the disease in a previous epidemic. In the other thirteen cases, Müller thinks that the abortion was due to influenza. Protracted blood-stained lochia were often observed without there being any evidence of anything being left behind in the uterus.

3. Uterus didelphys.

Arthur Giles read a paper to the Obstetrical Society of London on a "Case of Uterus Didelphys," with remarks on the clinical importance of this malformation. He recalled the three principal types of double uterus—septus, bicornis, and didelphys. He next described his case, which was observed at the Middlesex Hospital. The patient complained of a protrusion from the vagina; this was found to be the remains of the vaginal septum. Under ether the exact condition was ascertained; it was illustrated by a drawing. Giles discussed the clinical features of the condition as illustrated by recorded cases. Abstracts of these were given under five headings:—(1) Cases of unilateral atresia with retained menstrual products, five cases. (2) Pregnancy in one half of the uterus, eight cases. (3) Simultaneous pregnancy in both halves, two cases. (4) Cases uncomplicated by atresia or pregnancy, six cases. These twenty-one cases (including his own) were all that he could find recorded during the last twenty-five years as occurring in living adults. (5) Cases discovered on the *post-mortem* table, four cases. A table was given of the twenty-one clinical cases, illustrating the following points:—(1) Age; most of the patients were under thirty. (2) Marriage; fifteen were married; in two there was dyspareunia. (3) Parity; pregnancy occurred in fourteen of the fifteen married cases; eleven had borne children, and three had miscarried. Among the eleven, sixteen labours occurred, of which ten were natural. The six cases of dystocia were as follows: obstruction to labour by the empty retroverted half, three cases; obstruction by the vaginal septum, one case; forceps, two cases. (4) In four cases the two halves were of equal size; the right was larger in six and the left in eleven. (5) In only one case was the vagina originally single; in six there was atresia of one half, in the remainder the two vaginæ were patent and separate. (6) Menstruation was slightly delayed; it occurred—

At 14 in 3 cases.
At 15 in 4 cases.
At 16 in 4 cases.

At 17 in 1 case.
At 18 in 1 case.
At 26 in 1 case.

It was regular in twelve out of sixteen recorded cases, and painless in twelve out of fifteen. In one case the two halves menstruated separately. In the eight cases of a single pregnancy there is mention in four of a decidua in the non-gravid half.

The clinical complications that may arise are:—

1. Unilateral atresia, with retained menstrual products.
2. Dyspareunia.

3. Double vaginitis or endometritis, unsuccessfully treated by application to one half only.

4. Obstruction to labour by the retroverted non-gravid half.

5. Obstruction due to the vaginal septum.

6. Retained and undiscovered products of conception in one half in cases of double pregnancy.

4. Heart disease and pregnancy.

Handfield-Jones, in the Harveian Lectures (*Lancet*, January 18 and 25 ; February 1, 1896), has discussed fully "The Heart in its Relation to Pregnancy, Parturition, and the Puerperal State." After reviewing the various opinions published as to the question of cardiac changes in normal pregnancy, he states his conclusions, based upon clinical and *post-mortem* evidence, and substantiated by logical deduction: (1) that hypertrophy of the left ventricle does occur in normal pregnancy, but in delicate and feebly developed subjects it may sometimes be absent, and in these cases signs and symptoms of cardiac insufficiency are likely to occur; (2) that a certain amount of dilatation of all the chambers of the heart does normally take place in pregnancy; (3) that after parturition the heart is reduced to its normal size (before pregnancy) by a process of fatty degeneration. He finds that in strong, healthy women, advanced to nearly the full term of pregnancy, increased arterial tension is always present.

Disorders of compensation and fatty degeneration of the muscular tissue of the heart are the two causes of heart failure. The heart during pregnancy and the puerperium is specially liable to undergo fatty degeneration. This may be due to retrograde changes taking place after delivery, or may depend on the premature setting-in of these changes together with an insufficiently oxygenated state of the blood, dependent partly on anæmia and partly on lung disease.

The condition of the muscular heart wall is of more importance during pregnancy than the valvular lesion. Many women with valvular lesions pass through their early pregnancies without any sign of heart failure, but as the heart muscle becomes deteriorated by the strain of repeated pregnancies, or from any other cause of debility, they show evidence of cardiac insufficiency.

Failure of the left ventricle due to hypertrophy is a frequent cause of abortion in the earlier months of pregnancy, and Handfield-Jones quotes several cases of women who have had frequent miscarriages owing to absence of left-ventricle hypertrophy from ill-health or overwork, and who, under proper treatment, have gone to full term. That failure of the left

ventricle was the cause was shown by repeated faintings, œdema of the lower extremities, palpitation, dyspnœa, and other obvious symptoms of cardiac insufficiency, as well as by a feeble apex-beat, soft first sound at apex, and by the character of the sphygmographic tracings. The premature expulsion of the ovum is effected by means of numerous small extravasations of blood between the ovum and the uterine wall, due to disease and weakening of the arterioles and capillaries from imperfect and insufficient blood supply. It is clear that the condition of the heart before the outset of pregnancy, and the degree to which the compensatory hypertrophy is absent, will play an important part in determining (1) how soon the signs of cardiac insufficiency will manifest themselves, and (2) how marked those symptoms will be. In most cases the symptoms of heart distress appear in the third month of pregnancy.

Equally disastrous consequences follow incompetence of the right ventricle, which is chiefly met with in cases of mitral incompetence, and in cases where lung disease increases the work of the pulmonary circulation. It is undoubtedly true that pregnancy comes as a formidable complication in cases in which endocarditis has *recently* existed, for the increased strain upon the heart is very prone to lead to a recurrence of the endocardiac inflammation, and puerperal endocarditis seems to have a special tendency to become distinctly ulcerative; but we see that in the majority of instances patients with valvular disease of the heart pass through pregnancy, labour, and the lying-in period quite as satisfactorily as patients who have sound valves to their hearts. In one case a young woman aged twenty-five, who had suffered from diseased mitral valves since childhood, noticed through three pregnancies that she always had less cardiac trouble when "carrying" her child than at any other time. Of all the forms of valvular lesion mitral stenosis of a marked degree is the most disastrous; this is largely due to the extra strain thrown in these cases on the pulmonary circulation. The increased arterial tension, the increased volume of blood, and the increased development of the left ventricle all tend to produce dilatation of the right ventricle. At the close of delivery, when more blood collects in the right side of the heart, the risk is increased and the danger reaches its maximum. Termination of pregnancy from failure of the right ventricle takes place as a rule in the later months of pregnancy, and is due to venous congestion, causing stagnation in the intraplacental circulation, followed by alteration in the chemical composition of the blood and death of the foetus from asphyxia.

Primary heart failure during parturition is rare ; it is the exception to find marked instances of the heart showing distinct evidence of incompetency for the first time during the progress of labour ; but, on the other hand, it is quite common to meet with cases in which the strain of parturition seems to have been the determining factor in producing a dangerous condition of cardiac weakness. Handfield-Jones contends that it is not any sudden diminution of arterial pressure arising from the removal of the placental circulation that we have to fear as the cause of sudden death during labour, but rather the presence of the extra pressure arising out of the down-bearing effort. The danger from disturbed pressure is passed as soon as the child is expelled, and not only beginning then, as Spiegelberg would have us believe.

The condition of the heart after parturition is more critical than at any other time, and death from heart failure occurs with the greatest frequency in patients during the week after labour. The down-bearing pains of the second stage of labour throw an additional strain on the weakened powers of an already enfeebled or diseased heart. Arterial pressure is suddenly diminished and venous pressure increased, adding to the work of the right heart. In many cases there is reason to believe that the muscular tissue of the heart is already weakened at the close of pregnancy by fatty degeneration, and this condition of the heart renders it still less able to bear any additional strain. During pregnancy the nervous system is in a state of exalted tension ; after delivery there is a reactionary depression, and this must act injuriously on the nervous mechanism of the heart. In one class of cases of heart failure after delivery there is an interval before dangerous symptoms set in, and their onset is more or less gradual. In this group evidence of heart disease is either absent during pregnancy, or, if manifested, the symptoms are so slight that attention is hardly directed to them ; even during labour the heart proves fairly equal to its work, and even for some days afterwards shows no signs of failing. Morbid changes are, however, occurring in the muscular tissue, and may be in the nervous supply of the organ, and after a deceptive lull of one, two, three or even more days the storm declares itself. From the point of view of treatment, the subject is of immense importance ; for clearly, with such a possibility before us, it would be folly to postpone stimulant treatment until signs of cardiac failure have commenced. In all cases in which there is evidence of the presence of conditions likely to act injuriously on the heart, it is our duty from the time of labour onwards to spare the heart every possible muscular exertion or fatigue, and to maintain its

powers at the highest possible level by the liberal use of stimulants and cardiac tonics. Since the heart is called upon during pregnancy to move a larger column of blood than the normal, and since, in many instances, such excess of blood is not carried off by the loss which occurs during labour, it becomes an important question whether a free venesection may not be the best mode of giving relief to an overburdened and failing heart after delivery.

A second class of cases is characterised by sudden collapse, occurring from a few minutes to several days after delivery. It is in this group, perhaps, that Spiegelberg's theory finds its best exposition; but Handfield-Jones thinks that the variations in pressure suggested by this author are of less importance than a condition of fatty degeneration of the heart muscle.

The third class is by far the largest and the most important. In these cases there has been evidence of heart weakness during pregnancy, and the strain of labour is the determining factor which finally damages the heart and leads to an arrest of its function either in the latter part of labour, or more often within a more or less brief period after parturition.

As regards the question of marriage, when the woman is the subject of chronic heart disease Handfield-Jones thinks that, provided a valvular lesion is well compensated and the muscular tissue of the heart can be judged to be sound, and provided also that the patient is a young woman in whom processes of repair may be expected to go on at a healthy rate, there would be no just reason for forbidding her to marry.

As to induction of abortion or premature labour in cases of failing heart, the condition of any patient in whom induction of labour in the latter months of pregnancy is thought a necessary operation is one of extreme gravity, and the mere fact of interrupting the pregnancy will not stay the cardiac degeneration which is going on. Although the patient may survive the labour, she will probably succumb during the early days of the puerperium. In practice it would seem that artificially-induced labour throws more strain on the heart than when the process is originated by nature. The cases in which we should resort to the induction of premature labour are those in which it seems desirable at any cost to relieve the diaphragm from the upward pressure of a large abdominal tumour such as the pregnant uterus. With regard to abortion in the early months, Handfield-Jones thinks that the case is different, and that when symptoms of heart failure are noted as early as the third or fourth month the emptying of the pregnant uterus is justifiable.

Free bleeding during the third stage of labour has a most useful effect, and equally beneficial is the application of leeches over the liver or heart during the puerperium where blueness of the lips and face, with dyspnoea and pulmonary troubles, tells a tale of an over-distended and failing right ventricle. Of all drugs strychnia and nitrite of amyl seem to be the most useful.

5. Osteomalacia.

James Ritchie, at the Edinburgh Obstetrical Society on Feb. 12, 1896, read a paper on Osteomalacia which gives an excellent account of this malady. The onset of the disease is usually obscure, and it affects chiefly the osseous and nervous systems.

Cases are often mistaken for rheumatism or disease of the spinal cord, having paresis of the lower limbs, increase of knee-jerks, contracture of adductors, and general weakness of the muscles. The earliest symptom is usually pain in the sacrum, pelvis, or spinal column, followed by difficulty in walking, producing a rolling or waddling gait. The disease may be recovered from at any stage; it may progress slowly or rapidly, evenly or with exacerbations. The bones bend owing to the removal of earthy salts, and the pelvis assumes its characteristic form. Owing to their distortion the origins and insertions of the muscles of the thighs are approximated, and their ability to act is therefore diminished. Sometimes rhythmical movements like those characteristic of cerebro-spinal sclerosis are present, also tetanic seizures. The generative system, apart from difficulty in parturition, seems to be healthy. Metrorrhagia may be present. There seems to be a considerable difference in age in different localities. In Bavaria the largest number of deaths is returned as at between twenty and thirty years of age. The disease has been observed in men. Lactation seems to favour the production of the disease, yet it has not been noticed in Japan, where the women nurse for two or three years. The morbid anatomy consists in the early stages of dilatation and congestion of the medullary vessels, and the bones become more cancellous. The bone salts are removed from small areas, but immediately beyond the decalcified area the bone seems to be normal. Osteoclasts are seen in the parts affected. There is no inflammatory exudation, but a process of new formation can be seen going on with the absorption. No constant changes have been found in the blood, and the tissues as well as the blood have been subjected to very careful bacteriological examination, but no constant result has been obtained. A condition similar to this disease has been noted in animals. About twenty years ago the condition was considered almost hopeless. Cases in which the disease

advanced during pregnancy have been known to recover after confinement, and the climacteric has also had a beneficial effect. The disease has, however, been known to occur after the menopause. Different writers have had good results from internal treatment, the most beneficial drug being phosphorus. Baths of sodium chloride have given good results. Chloroform narcosis has been suggested, but very little benefit has followed its use. Oöphorectomy has now become an acknowledged method in the treatment. The result is not definite and certain, but a large majority are completely cured, others are improved, and only a small proportion show persistent relapse or no change in the course of the disease. The uterus has been removed after oöphorectomy with improvement. Ritchie discussed very fully the different opinions held regarding the ætiology of the disease; he considered the essential character of the disease to be trophic. This view is borne out by the microscopic examination of the bone both during the stage of advance and during recovery, as not only the salts but also the organic parts of the bones are removed. Another fact is the early date at which nervous phenomena appear. These are not due to pressure; and the early increase of patellar reflexes, the ankle-clonus, and muscular spasms all show that the cord is involved. After operation the rapid amelioration and disappearance of the pains in movement all point to the central origin of the disease. These symptoms are sometimes considered as reflex, and place the source of irritation in the ovaries; but the disease has been known to arise after the removal of both ovaries and uterus. Either some other source of irritation must be found, or the disease located primarily in the spinal cord. The precise nature is not known, but it probably involves some of the large caudate cells in the anterior cornua, and it may also affect the adjacent nerve cells, thus leading to the increased reflexes. With these cells in a condition of low vitality and increased irritability the effect of reflex irritation from the ovaries or other organs at the menstrual periods and during pregnancy might be sufficient to excite or aggravate the disease; and prolonged lactation or deficient hygienic conditions, by lowering the general nutrition, would also affect the nerve-centres.

6. Cancer of the pregnant uterus.

George Noble (*Amer. Journ. of Obst.*, June, 1896) has collected 166 cases, and, basing his views upon the data thus afforded, lays down the following rules for guidance in the treatment of pregnancy complicated by cancer of the uterus:—In cases of early pregnancy, when the disease has not yet extended beyond the cervix, vaginal hysterectomy should be performed at once; but if

pregnancy is too far advanced to permit of extirpation by the vaginal route, he considers that it is better to perform Freund's operation rather than waste time in emptying the uterus and subsequently extirpating the organ, thus reduced in size, through the vagina. He finds, however, that statistics show that vaginal hysterectomy, when performed in the early weeks of the puerperium, does not appear to be attended with any additional risks. At full term Cæsarean section, followed by total extirpation, is the ideal operation, if the foetus cannot be born through the natural passages; but if there is any extension of growth into the parametric tissue, then Cæsarean section alone should be done.

Japp Sinclair (*Med. Chron.*, May, 1896) records a case in which he performed vaginal hysterectomy after inducing premature labour in a patient six and a half months pregnant, with cancer of the cervix. He holds that the operation of total extirpation should be performed without delay, whatever the period of pregnancy may be, provided the disease is not too far advanced. After the first four months of gestation it is necessary, first, to bring on abortion, and then two or three weeks later to perform vaginal hysterectomy. If septic endometritis follows the abortion, which, in cases where the growth is in a sloughing condition, is not uncommon, the uterus should be extirpated forthwith. In cases of advanced cancer at full term, the foetal and maternal mortality is very high. He says that experience seems to show that, with regard to cases at full term, spontaneous delivery, if possible, even though labour be prolonged, gives the best result for the mother, but the foetal mortality is very high. But if the disease is so far advanced that delivery cannot take place without operative interference, then Cæsarean section gives the best results for both mother and child.

Charles A. Morton (*Lancet*, August 8, 1896) describes a case of supra-vaginal amputation of the cervix for carcinoma during the fifth month of pregnancy. His reason for deciding on this operation in preference to removal of the whole uterus was that supra-vaginal amputation is an eminently satisfactory operation, with a small mortality, and a period of non-recurrence over two years in the majority of cases, and as this was a case of cauliflower-like growth of the kind that does not tend to spread up the cervical canal, it would have been a most suitable case if the woman had not been pregnant. Morton admits that the liability to hæmorrhage is increased when the patient is pregnant, and there is the possibility of septic absorption occurring from the cut surface of the cervix after the abortion which would probably follow the operation; but he points out the risk of so severe an operation as removal

of the whole uterus, pregnant to the fifth month. He is, however, of the opinion that in suitable cases supra-vaginal amputation of the cervix by the galvanic écraseur and securing the uterine arteries in the broad ligament is to be preferred to the total extirpation of the uterus in every case of cancer of cervix.

III.—EXTRA-UTERINE FŒTATION.

A case of extra-uterine fœtation; operation near full term; child living; death of mother three weeks after delivery.

The above case is reported by Handfield-Jones (*Lancet*, October 19, 1895). The patient, who had previously had one child, menstruated regularly till the last week in August, 1891. There was a scanty flow at the end of November, and again in December. On November 24 she had sickness and pain for two days, with marked anæmia and prostration. On examination there was a hard rounded swelling rising above the right Poupart's ligament. There was a similar attack, but a less severe one, a week later, and again in a fortnight. The diagnosis of extrauterine fœtation was made, and the patient being very well, it was decided to take her into St. Mary's Hospital and keep her under close observation. The tumour gradually enlarged, but, with the exception of one attack of pain, the patient had no untoward symptom. On April 27 the abdomen closely resembled the appearance of an ordinary case of fecundity about the end of the eighth month, except that there was a marked bossing on the right side between the lower ribs and Poupart's ligament, which was thought to be caused by the placenta—a view that was found to be correct at the time of the operation. No shreds of membrane or decidual cast had been expelled. It being about the 250th day of gestation, it was decided to operate. When the abdomen was opened, the hypertrophied body of the uterus was seen rising some three inches above the brim of the pelvis; above this the smooth and convex surface of the fœtal membranes was seen, and overlapping the membranes on the left side and above were coils of intestine. On making an incision into the membranes several ounces of clear fluid escaped, and then a second bag of membranes came into view. Manifestly the fluid that had escaped was situated between the chorion and amnion. The latter membrane was now incised. The child was lifted out and the cord rapidly tied. The placenta was attached low down in the pelvis on the right side over the right iliac fossa, and then spread up over the right flank till it was reflected by the diaphragm and ribs on to the right abdominal wall. Blood was beginning to well

up from the deep part of its attachment. The umbilical cord was now cut short and dropped back into the sac of the membranes, which were then sutured to the edges of the abdominal wound. The abdominal wound was closed with the exception of two inches at the lower end, where a drainage-tube was passed down into the sac of the membranes. The infant was well nourished, and weighed nearly seven pounds; she left the hospital at the end of three months, in every respect a healthy, well-developed child. The mother did well till May 8. She had no very definite symptoms, but slowly losing flesh and strength she drifted into a typhoid condition and died on May 18. The discharge from the placenta remained perfectly sweet, but some sloughs of membranes were removed through the wound.

Necropsy.—On opening the abdomen the foetal membranes were found firmly adherent around the abdominal incision, completely shutting off the peritoneal cavity. There were no signs of general peritonitis. The uterus, enlarged to about a three months' gestation, contained a well-marked decidual membrane. The right tube was much elongated, and continuous, at what was apparently its fimbriated end, with the foetal sac. The right ovary was represented by a small nodular mass at the lower part of the foetal sac. The placenta spread upwards from the pelvis and the side of the uterus, was adherent over the whole right iliac fossa, then passed upwards over the region of the right kidney, and then passed forwards on to the right side of the abdominal wall. The aspect of the peritoneum at the site of attachment was so altered that it was difficult to trace its relations. Numerous vessels passed from the under surface of the placenta to join the neighbouring organs and tissues. The largest vascular connection was a large vein which opened directly into the common iliac vein, and which was necessarily torn across in peeling off the placenta. No pus was found anywhere, but low down in the pelvis was about $1\frac{1}{2}$ ounce of red, grumous fluid. The placental tissue was healthy throughout except for a small superficial slough where the placenta bulged through the abdominal wound.

Thus there was little in the necropsy to explain the cause of death. No general peritonitis existed, there was no collection of pus, yet the clinical history and the temperature chart point strongly to some form of septic poisoning. It seems probable that the superficial slough was the source and supply of the septic material. The necropsy showed most clearly that any attempt (either primary or secondary) to remove the placenta would most certainly have led to a fatal hæmorrhage. The difficulty in these cases at nearly full term is the method of dealing with the

placenta, and in a similar case I shall in the future remove as much of the membranes as possible, cut the cord close to the placenta, and close the abdominal wound entirely, leaving the placenta untouched. There would seem to be no reason why the latter organ, which has rested in the abdomen for some months in vital connection with surrounding parts, should not continue its existence, gradually undergo retrograde change, and form a quiescent tumour of lowly-organised fibrous tissue.

This case follows well as a sequel to that of **Cullingworth**, abstracted in the "Year-Book of Treatment," 1896, p. 335. Then, as in the present case, symptoms of septic poisoning set in more than a fortnight after delivery, and the operator determined to remove the placenta, but lost his patient from the shock of the operation. Cullingworth thought that failure to secure absorption of the placenta was purely accidental, and states that he should not hesitate to adopt the same treatment again. The above case, however, shows clearly what difficulties will not infrequently be met with in peeling off the placenta if this manœuvre be attempted. On the other hand, **David Hardie**, of Brisbane, reports a case of extra-uterine pregnancy where he operated at the eighth month. The child lived for six hours, and the mother recovered. In his case he sewed the sac of membranes to the abdominal wound, and left in a gauze drain for six days. The placenta became septic, and was removed in pieces during the sixth and seventh weeks, the sloughs coming up to the wound. There was no hæmorrhage. Hardie says that in future he would stitch the sac to the wound, leave a gauze drain for twenty-four hours, and then close the wound. Should symptoms of sepsis arise, it would be an easy matter to reopen the sac. He lays stress on the importance of ascertaining, if possible, the position of the placenta before commencing the operation.

IV.—OPERATIVE DELIVERY.

1. Symphysiotomy.

Pinard, in the *Annales de Gynécologie*, January, 1896, continues the records of symphysiotomy at the Clinique Bandelocque. During 1895 there were 107 cases of contracted pelvis; forty-five of the patients were primiparæ, and sixty-two multiparæ. Among 107 cases there were five maternal deaths. In three of the fatal cases symphysiotomy was performed, in one Porro's operation, and in one basiotripsy. Of the 107 there were seventy-seven spontaneous deliveries. Of the remaining thirty cases symphysiotomy was performed in twenty, and of the remainder

delivery was effected by version in one case, by Porro's operation in one case, by forceps in three cases, by basiotripsy in four cases, and in one case abortion was induced.

There were three deaths of mothers among the twenty cases of symphyiotomy, giving a mortality of 15 per cent. The mortality of the children was also 15 per cent. The total number of symphysiotomies performed by Pinard is sixty-nine, with seven deaths of mothers, and eight deaths of children.

A formidable objection to symphysiotomy has been that it endangers the solidity of the pelvis. Pinard says that the solidity of the pelvis is not weakened even by repeated symphysiotomies. He prefers version to delivery by forceps when the head is high up after the operation has been performed. Pinard protests against the statistics of symphysiotomy being compared on the one hand with those of Cæsarean section, and on the other hand with those of induction of premature labour. For in cases of Cæsarean section he asserts that operators too often choose their cases and perform embryotomy on a living child if they suspect that the patient has already been infected; and as regards the induction of labour the comparison is not fair, because the operation is undertaken in healthy women who are carefully prepared, so that the risks of infection are reduced to a minimum. Pinard performs symphysiotomy in all cases where the child is living, apart from any consideration of the state of the mother or of the surroundings from which she may have just come. He maintains that a large number of healthy full-term children are now spontaneously delivered in cases of slight pelvic contraction where, if it had not been for the knowledge that symphysiotomy could be performed if the need for interference became imperative, premature labour would have been induced unnecessarily.

2. Artificial delivery after maternal death.

Clavierie (*Thèse de Paris*, 1895) agrees with Lebreton (1828) and Duparcque (1823) in the principle first laid down by the latter—that, when a woman dies before labour has commenced, immediate delivery by the natural passages is necessary. The cervix should be laid open to facilitate immediate dilatation. Cæsarean section, it is said, has revived apparently dead women when the knife had already been used too freely and too roughly to allow of permanent resuscitation. In any case no woman has been victimised in this manner when delivered after Duparcque's principle, whilst several have proved to be alive and have subsequently recovered. Though delivery through the vagina takes some time, it can be commenced at once in hospital or private

practice, so that the child is usually got out more quickly than by Cæsarean section. It appears from statistics that as many if not more children are saved by this method. Artificial delivery is always preferable to Cæsarean section if it is not quite certain that the mother is dead.

3. Rupture of the uterus.

Fritsch (*Wien. med. Presse*, June 9, 1895) discusses the treatment of this accident at great length. If the rupture is diagnosed, and the child has completely escaped into the abdominal cavity, it should be extracted as quickly as possible by laparotomy; but if it has only partially escaped from the uterine cavity, extraction through the natural passages is to be preferred when this can be done. In cases where hæmorrhage is profuse or extraction through the vagina impossible, the abdomen should be opened. After uterine rupture, the patient may die from loss of blood or from sepsis. Fritsch does not believe that tampons or pressure are of any use in controlling the hæmorrhage in these cases, nor does he think that the bleeding vessels can safely be ligatured through the vagina. In cases, therefore, where the loss of blood is sufficient to threaten the patient's life, the abdomen should be opened and the bleeding vessels secured. If, however, when the patient is first seen the bleeding has already stopped, absolute rest, combined with the internal use of opium, is the best treatment. Vaginal douches should not be employed.

Fenner (*Centralb. f. Gyn.*, No. 2, 1895) describes two cases successfully treated by tampons of iodoform gauze introduced through the vagina. He points out that the prognosis depends largely upon the question whether the labour has been conducted aseptically or not.

Cholmogoroff (*Zeits. f. Geburt. und Gyn.*, Bd. xxxi., Heft 1) relates a case in which he sutured the edge of the uterine wound, after rupture, through the vagina. He drew the uterus well down by means of a volsella, and having trimmed the edges of the wound, he sutured them together, leaving the lower angle of the wound open. Through this aperture he introduced a long strip of iodoform gauze into the peritoneal cavity, and left it *in situ* for eight days. The uterine cavity and the vagina were packed with iodoform gauze as well. The patient recovered.

4. The prone position for version.

Mensinga (*Centralb. f. Gyn.*, June 6, 1896) recommends the prone position for version. The genital canal is thus in a much more favourable position, the operator has more room, his arm is prone all the time, and his sense of touch and muscular feeling is much more exact than when, with the

woman on her back, it is supine, and some of the muscles of the forearm are twisted. The uterus is shortened and the os pressed into the pelvis; the vagina is also shortened, and therefore more dilatable, so that the introduction of the hand is much facilitated. The os uteri is more easily passed, and, the back of the hand resting the whole time against the spinal column, the proper way is indicated in which to lay hold of the child's extremities. For the patient, the disagreeable position across the bed is avoided. She lies at full length with a pillow below her thorax and her head turned to one side; the operator sits comfortably by the bedside. It is an advantage for him to be ambidextrous, so that there need be no turning the bed about. Such accidents as separation of the uterus from vagina, or embolism from introduction of air into the womb, do not occur. The operation is much less painful; the less the opposition the less the force required and the less pain, and, what is more important, the less force the more delicate the sense of touch. The passage of the hand through the vulva is the worst part, and more painful than its presence in the vagina; the dilatation of the latter tends to dilate the os, and it is seldom hard to introduce the hand into the womb. The shortening of the womb brings the parts towards the hand, which has not to explore so far, and the woman has less of the sensation of "raking out her bowels." Chloroform is not necessary, but can be replaced by an injection of morphine if desired. The perineum is constantly in sight, though it cannot invariably be saved. Mensinga has adopted this method for the past eight years, with increasing satisfaction.

5. Cœliotomy for post-partum accidents due to ventrifixation.

Guerard (*Centralb. f. Gynäk.*, p. 531, 1896) reports a case in which a delivery by forceps was followed by severe *post-partum* hæmorrhage. Ventrifixation had previously been performed, and, when stimulated, the uterus contracted well up to the point of fixation and then relaxed. It was impossible to apply massage properly, or to apply bimanual pressure to the uterus between one hand on the abdomen and the other in the rectum, a proceeding otherwise nearly always successful; and the cervix was too high for Guerard to secure the uterine arteries, as he had done in most difficult circumstances. Abdominal section was performed and the uterus set free, a wedge-shaped piece of the torn uterus being excised, and the edges of the wound sutured with silk. The patient did very well, and was up in three weeks.

In connection with this case we may note a table given by

Plotz (*Centralb. f. Gynäk.*, p. 538, 1896) of conceptions subsequent to ventrifixations and vaginal fixations performed by him:—

	Operations.	Conceptions.	Abortions.	Normal Labour.	Forceps (low).	Gross-birth (Version).	Retroflexion recurred.
Ventrifixation . . .	97	12	7	4	—	1	1
Vaginal Fixation . .	182	34	13	15	5	1	2

V.—THE PUERPERAL STATE.

1. The use of streptococcus antitoxin in the treatment of puerperal septicæmia.

The important subject of the treatment of puerperal septic poisoning by serum injections has been brought before the profession during the past year, and though at present the results are too uncertain to allow us to offer any hopeful criticism regarding the success of this method, yet the subject is of such importance, considering the deadly effect of that form of septic intoxication, that any effort at fresh advance must necessarily be of the greatest interest.

From the observations already made it is at once apparent that a most important point has yet to be settled, viz., whether a serum has yet been used of sufficient strength to meet the attacks of puerperal sepsis in its most marked forms. There seems, however, to be sufficient evidence to encourage further investigation upon the lines already laid down.

Angus Kennedy (*Lancet*, November 2, 1895) records the first case in which antitoxin has been used in England in puerperal septicæmia. The patient after twelve hours' labour was delivered with forceps on August 28. On the fourth day the temperature rose to 103° F., but after a free evacuation of the bowels fell to normal, where it remained till September 11, when it rose to 101° in the evening. On September 14, seventeen days after labour, she had a slight rigor in the morning, followed by a more severe one in the afternoon, when the temperature rose to 104°. On September 15 the temperature was 104°, pulse 130, and very feeble. The abdomen was somewhat distended and tympanitic, the tongue being fairly clean. There was no uterine tenderness. The temperature again fell after a copious motion, leaving the patient very feeble and exhausted. On September 17 the temperature rose to 103°, and her general condition being much worse, though there were no

local symptoms, 40 c.c. of the antitoxin were injected. In six hours the temperature fell to 100° , and the pulse-rate was 112, and she said her head felt much clearer. But fourteen hours after the injection her temperature rose to 102° , and 45 c.c. of the antitoxin were given. The temperature again became normal, and though the patient remained much exhausted, she gradually improved.

Gaulard (*Presse Méd.*, November 30, 1895) reports two cases: (1) A rickety woman with a contracted pelvis had a prolonged labour on August 26. Face presentation; the perineum was ruptured, but sutured at once. On September 2 the temperature rose to 105° F., and remained there for four days. On September 6 Gaulard saw her; the pulse was then 140 and irregular, and diarrhœa was present. There were some sloughs on the vagina, and the perineal wound was suppurating. He curetted the uterus, bringing away nothing of importance, and packed it with iodoform gauze. The next day the temperature had fallen to 102.7° F., but on September 8 it rose again, and her general condition was very grave; 10 c.cm. of Marmorek's antistreptococcic serum were injected into the abdominal wall. The temperature was rather lower on the next day, and 2 c.cm. of serum were injected. The temperature from that time fell steadily, and the patient was soon out of danger. (2) A rickety woman was brought to the clinic on September 24. Forceps had been unsuccessfully applied, so a basiotripsy was performed. The temperature rose on the 26th, and reached 104° F. on the evening of the next day. The uterus was swabbed out and plugged. On the 28th, cultivations of streptococci were obtained from the discharges, so 10 c.cm. of antistreptococcic serum were injected (the temperature then being 104.9° F.). On September 29 a second injection was given, the temperature still rising. September 30, third injection; evening temperature, 102.9° F. A fourth injection was given on October 1. On October 2 the evening temperature was 101.5° F., and the general condition of the patient being satisfactory, recovery was hoped for. No pain was felt at any time. The temperature continued to fall and reached normal on October 4, but in the evening of October 2 she was seized with bilious vomiting and tympanites. Her condition grew worse on the 4th and 5th; she became semi-comatose and died on the 6th. Gaulard had never before seen a case of puerperal fever die during defervescence, and he believes that the injections of serum were the cause of the vomiting, which nothing could control. He fears that too much serum was used, for *post mortem* there was no sign of peritonitis or suppuration. The question of the maximum dose

remains to be settled. He is sure that this treatment does not do away with the necessity of using the curette, which clears away any *débris* and cleanses the centre of infection. If the germs have already passed into the circulation, the serum can be employed against them and their toxins.

Butin (*Journ. des Sc. Méd. de Lille*, No. 35, 1896) gives details of two cases of puerperal fever. In the first instance the treatment was not begun till more than a week after the commencement of the fever, and after sundry relapses, and the injection on five occasions of serum amounting to 90 c.cm., the patient recovered. In the second the injections were made at once, and the disease was almost cut short. In both cases local treatment, consisting of mercurial douches and iodoform, was continued throughout. It was noted that the temperature and the general condition greatly improved after each injection. In one case slight erythema and transient arthralgia were caused by the injections; in the second there were no troubles, either local or general.

Charpentier (*Société Obstét. de France*, April 10, 1896) has collected forty cases of puerperal fever treated by antistreptococcic serum in the different departments of the Paris hospitals and in private practice. The results were twenty-two recoveries and seventeen deaths—giving a mortality of 42·5 per cent. In no case was the serum treatment alone adopted, but intra-uterine medication was always employed as well.

Deducting from the forty cases five where the patient was *in extremis*, and one where the result was vitiated, we have a death-rate of 35·29 per cent. Bacteriological examination was made in twenty-five instances and streptococci were found in sixteen cases, of whom nine recovered and seven died. The doses of the serum varied very greatly.

Urticaria, erythema, pruritus, and divers nervous phenomena were observed. **Gaulard** of Lille attributed one death to the use of the serum. **Budin** is inclined to deny the utility of this method of treatment, and **Charpentier** states that the high hopes at first entertained as to its efficacy are unfulfilled.

Bar and **Tissier** have employed Marmorek's serum in nineteen cases, with ten deaths and nine recoveries. Eliminating three who were *in extremis*, and three where there was no bacteriological examination, their results were thirteen cases with six deaths.

Royer and **Charrin**, employing their own serum, report six cases. Eliminating one, where there was no bacteriological examination, we have five cases and four deaths.

Buss has seen no albuminuria following the injection of serum, but has seen more or less grave symptoms caused by it, and in one case an abscess formed, in the pus from which streptococci were found.

Vinay (*Lyon Méd.*, 1896, p. 109) has employed serum from a horse immunised at Lyons by the injection of filtered culture of streptococci. In two of four cases treated by him the injections were not made till the twenty-second and twenty-fifth day, and were of no benefit. In the others the injection had an immediate effect in lowering the temperature and improving the general condition, but was of no avail against organic lesions already established. Early intervention is, therefore, a condition of success, and as puerperal infection may be independent of streptococci, the discovery of the infectious agent would be most desirable. Such research, however, might unduly delay treatment, and as the conjunction of certain symptoms—rigors, high fever, and rapid deterioration of the general condition—permit us to affirm, with almost absolute certainty, the presence of infection due to streptococci, in such cases intervention should be early in order to modify the internal media, annul the action of microbes and toxins, and obviate the organic degenerations that are beyond control. The effect of the injections seems to be more marked and more immediate where they are made at the time of the spontaneous evening rise in temperature. Local treatment, curettage, and antisepsis are not to be neglected.

McKerron, of Aberdeen (*Brit. Med. Journ.*, October 10, 1896), reports three cases, with one death. In none of them was the serum employed early, and the exact effect of the injections was uncertain, though the evidence on the whole was favourable. Two beneficial results uniformly followed the injections—a steadying of the pulse, and an improvement in the subjective condition of the patient.

An instructive case of acute septicæmia treated by anti-streptococcic serum is recorded by **Coleman** and **Wakeling** (*Brit. Med. Journ.*, September 12, 1896). The patient—a medical man—had attended, on June 28, a fatal case of puerperal septicæmia. From that time he showed symptoms of blood-poisoning. On July 13, 14, and 15 his condition was very grave; the temperature was 104° to 104.6° , pulse 110 to 120, respiration 50 to 56, the tongue was dry and coated; signs of increasing consolidation of the lungs were found; he was delirious at times, drowsy at others. On July 16, 20 c.cm. of serum were injected, and injections of 10 c.cm. were continued every four hours. After the

first injection the pulse became fuller and slower. After the second injection he became conscious for the first time for three days, and talked rationally. On July 17 his condition was much improved; but owing to the supply of serum running short, the injections were reduced to 5 c.cm., and were given only every seven hours. In the evening the temperature reached 103.6° , and an hour after an injection went up to 104° . At 4 a.m., July 19, the patient was much worse, but seemed better and was conscious after an injection of 5 c.cm. On July 21st he was much weaker; at 4 p.m. the temperature was 103° , but after an injection of 10 c.cm. fell gradually till it reached normal at noon on the 22nd. From the 21st to the 26th injections were discontinued, and the temperature gradually rose after the 23rd, though the patient seemed better. After a single injection on the 26th the temperature fell, but rose again till the 31st, when the patient was worse, becoming delirious. It was then decided to give injections of 10 c.cm. twice daily till the temperature should continue normal. From this time he continued to make a good recovery, the serum being permanently discontinued on August 4th.

In this case the diagnosis was confirmed by bacteriological examination—cultivations being obtained from the blood two days after the serum treatment had been commenced. The serum was mostly given in large doses, and it was seen that the larger doses produced more beneficial results than the smaller. It will be noticed that the serum was not used till three days after the onset of acute symptoms.

William Bullock (*Lancet*, May 2, 1896) details the methods employed at the British Institute of Preventive Medicine to render animals immune against streptococcus pyogenes for the purpose of obtaining a specific therapeutic serum. In conclusion, he says that in comparison with antidiphtheritic or antitetanic serum the curative effect of antistreptococcic serum appears to be slight; still, it must be remembered that the successive passage through rabbits renders the streptococcus so virulent that it is mortal to rabbits in very minute doses. Further, the horse must remain under treatment at least a year before the serum reaches its maximum antistreptococcic strength.

With regard to the dose of serum, for severe cases of puerperal streptomycosis 10 c.c. should be injected on each side of the abdomen as an initial dose, followed by another of from 10 to 20 c.c. if the temperature has not fallen; but much larger doses may be given with safety. Experimentally he has found that 10 c.c. injected into rabbits cause no bad symptom whatsoever, and in the human cases already treated no unfavourable results

have yet been recorded that could be referred to the serum itself. The true value of antistreptococcic serum will remain doubtful for some time on account of the difficulty of diagnosing streptomyces bacteriologically, for it must be remembered that the serum is specific against the streptococcus only, and attempts to cure staphylococcoses by it will be failures (as in several reported cases where the diagnosis of staphylococcus was made only after death).

2. Sepsis during pregnancy.

Bar and Renan (*Répert. Univers. d'Obstét. et de Gynéc.*, September 25, 1895) read at the recent congress at Bordeaux a clinical report of a case of "streptococcism" in pregnancy. A woman was admitted into hospital suffering from high fever. She was about eight months pregnant, and occasional pains set in. Some cervical secretion was removed for examination before any obstetrical manipulations. Cultivations proved that the secretion contained streptococci. As the patient was very ill, labour was hastened. Specimens of placental maternal blood were cultivated, and colonies of pure streptococci were obtained. The child died before birth; samples of its blood from the placenta, liver and heart, and fragments of the liver and lungs, were cultivated. The cultures remained sterile. The mother died fifty-three hours after delivery, and pus was found in the parametrium. Bar and Renan maintain that the "streptococcism" provoked labour. Though the foetus succumbed there is no evidence that the germs invaded the foetal organism through the placenta.

3. Micro - organisms of obstetrical and gynæcological interest.

In connection with the serum treatment of puerperal septicæmia, G. D. Robinson's paper on the above subject, read at the Obstetrical Society of London, is of especial interest. He gives an excellent summary of present knowledge of these micro-organisms. Robinson pointed out that in fatal cases of puerperal sepsis the streptococcus is constantly found in the blood and tissues. Normally, after labour, the uterine cavity was known to contain no microbe; but in cases of puerperal sepsis many micro-organisms of different sorts were found both in the uterine cavity and in the substance of the decidua. Of these, only the streptococcus pyogenes appeared to be able to pass through the uterine walls along the veins and lymphatics, and so to cause a general infection. This microbe might in these cases cause death without producing any obvious lesion, and three cases were cited in the

paper. Much more frequently the streptococcus set up suppuration in various tissues. Sometimes this microbe produced false membranes on the peritoneum or genital tract, with or without suppuration. Two cases were cited. Lately in some cases of phlegmasia dolens the streptococcus had been formed in the clots plugging the veins of the uterine walls and broad ligaments (more rarely in the clots plugging the iliac veins), and even infiltrating the vein wall itself. The supposed connection of the bacillus coli communis with various inflammations (usually suppurative) was next pointed out, and a case was quoted in which a woman four months pregnant had intestinal obstruction from retroversion of a gravid uterus. Abortion occurred four days after reposition, and was followed in a few hours by fever and diarrhoea, which continued until the death of the patient five days later. During life pure cultures of the bacillus coli communis were obtained from the uterine discharge, and after death these were obtained also from the uterine cavity, peritoneum, and blood of the heart.

Attention was next drawn to the gonococcus, its appearance as seen in gonorrhœal pus or pus culture, its relation to gonorrhœa discharges, and the situations in which it had been found.

4. The preventive treatment of inflamed breasts.

Walter S. Spencer (*Lancet*, February 29, 1896) and Brindeau (*Union Méd.*, February 29, 1896) write on this somewhat neglected subject. Spencer says that though doubtless with proper care the breast need never become over-distended, yet when it is beyond the powers of suction to empty it, the application of hot fomentations, poultices, or belladonna plasters is surely a mistake, for all the secondary ducts must quickly become converted into abscess cavities unless the milk be first removed. In the cases which he has treated during the last two years the breasts were extremely distended, lactation having recently been interrupted; the skin over the breast was, however, free from induration, so that the full ducts could all be felt. By the forcible expression of half a pint to a pint of milk suppuration was prevented. In two of the cases nitrous oxide gas was given; the other patients bore the pressure without an anæsthetic. Taking the breast in the hollow of the hands and increasing the pressure very gradually and as uniformly as possible, there first oozed from the nipple a few drops of whey, then a small plug of curd, followed by a stream of milk. From each duct a plug of curd had to be driven before milk came.

Directly milk flows, tension is relieved, and further pressure does not cause so much pain. The amount of pressure required when the breast was so over-distended, as in the cases alluded to, indicated clearly that suction would have been quite inadequate, whilst the fact that each duct was plugged by curd showed why the milk was retained and how inevitable must have been decomposition and suppuration. In his last case a small areolar abscess had already formed and blocked the nipple by its pressure. The abscess was opened under nitrous-oxide gas and nearly a pint of sweet milk expressed. No further suppuration ensued. Afterwards the patients have been ordered to foment and squeeze the breasts frequently, and to take iodide of potassium for a few days.

Brindeau points out that galactophoritis plays a great part in the causation of mammary abscess. The inflamed breast may have been infected through the blood or through the lymphatics, but most frequently the poison reaches the gland through its excretory ducts. Mammary abscess is the homologue of the abscesses in surgical kidney infected through the ureter. In galactophoritis the staphylococcus albus and aureus are found, but both species are found in healthy mammary ducts. Infection comes through excoriations of the nipple, from the hand of patient, nurse or doctor, or most frequently direct from the child, as its mouth is full of microbes, or its saliva is rendered septic by the more severe infantile disorders. There is also, not infrequently, inflammation of the child's fingers at the roots of the nails. About the second week the well-known symptoms of inflamed breasts appear. On pressure of the nipple, milk exudes from some of the ducts, but pus from others. The pus is yellow and more tenacious than the milk, but suspected exudations of this kind should be tested by absorbent wool, which takes up the largest drop of milk immediately, but cannot absorb pus. This fluid, when expressed from the duct, lies on the surface of the wool in the form of a greenish-yellow drop. Sometimes a drachm or more can be expressed. The process should be repeated twice or thrice daily, and the nipple carefully washed afterwards with an antiseptic solution. The child must not be fed from the inflamed nipple. If the expression of the pus be neglected, abscess will follow. Suckling from an inflamed nipple does great harm to the infant. Gastro-enteritis, pemphigus, and conjunctivitis are undoubtedly caused by the ingestion of pus with the milk. On the other hand, Brindeau insists that purulent conjunctivitis in infants is a direct cause of infection of the mother's mammary ducts.

VI.—THE MECHANISM OF DELIVERY.

1. Pelvic presentations.

McKerron, in "The Management of Pelvic Presentations" (*Practitioner*, June, 1896), gives his opinion with regard to the treatment of normal, easy breech cases, a subject on which text-books are greatly at variance. He agrees that the membranes must be more carefully kept intact than in vertex cases, but after the birth of the breech he advocates the routine employment of traction on the partially born trunk, on the grounds that (1) even where left to nature, extension of the arms occurs in a considerable proportion of cases; (2) where extension is artificially produced it can in normal cases be easily remedied; (3) traction forms the most speedy, and therefore in the interests of the child the safest, means of completing delivery; (4) by appropriate treatment, combined with traction, extension can almost invariably be prevented in cases where, if left to nature, it would not have occurred. He argues that if we follow the practice of non-interference unless the child is in imminent danger, then, if any difficulty is experienced in getting down the arms or in delivering the head, the child is almost certainly lost. But by traction employed in a routine manner after the birth of the breech we gain time; and though we may introduce a difficulty, the difficulty is one which can easily be removed, and which there is time to remove. McKerron maintains that it is possible, even where traction is employed, to prevent extension in the majority of cases by firm pressure applied over the now diminished uterine tumour. The application of abdominal pressure should be entrusted, where possible, to a skilled assistant. Both hands should be well and uniformly spread over the sides and fundus of the uterus. The main pressure should, if possible, be directed towards the thorax of the child, the position of which must always be defined. Throughout the traction the pressure must be strong and continuous. The best results will be got by this method when the abdominal wall is lax. To this end anæsthesia is an advantage.

2. Presentation of the fœtal head.

De Seigneux (*Rev. Méd. de la Suisse Romande*, May 20 and June 20, 1896) gives us the result of his observations in eighty consecutive cases of labour. He found that (1) the anterior parietal bone presented in eighteen, or 22·5 per cent. of the cases; (2) the posterior parietal bone presented in forty-three cases, or 53·75 per cent.; and (3) synclitic presentation occurred nineteen times, or in 23·75 per cent. Posterior parietal presentation at the brim is, according to Farabeuf, Pinard, and Varnier,

the normal type, but according to most authorities it is rare, and to be found only in very contracted pelves. Litzman found it in only 1·3 per cent. of 1,800 cases, and believed that labour never terminated naturally under these conditions unless the presentation changed spontaneously into an anterior parietal. De Seigneux found that, excluding cases where it coincides with extreme ante flexion of the uterus, the head engages in the pelvic brim as easily as in Naegele's obliquity or in the synclitic variety.

The nineteen cases of synclitic presentation all terminated normally, and he found that during the descent the circumference of the head remained parallel to the plane of the pelvic cavity until the floor of the pelvis was reached. Thus the foetal head may present at the brim in three different ways without leading to any difficulty in its passage through the brim. De Seigneux finds (*a*) that the dimensions of the pelvis have nothing to do with the presentation. All the eighty pelves were normal, except four in Group 1 (one generally contracted, and three flat rickety), five in Group 2 (two flat rickety, two generally contracted), and one generally contracted in Group 3. (*b*) That the presentation is determined by the inclination of the uterine axis to the plane of the pelvic inlet. Thus the posterior parietal presentation is more common in primiparæ (58·1 per cent.), because the uterus is generally inclined backwards owing to the tension of the abdominal walls, while Naegele's obliquity is more common in multiparæ with lax abdominal walls and ante flexed uteri (15·3 per cent. being primiparæ). Pelvic contraction acts indirectly only by facilitating ante flexion, which latter is aggravated by unusually lax abdominal walls. (*c*) That from the relation between the presentation and the inclination of the uterine axis one must conclude that the latter varies. (*d*) That an overlapping of one parietal bone over the other is often observed either with or without deformity of one of the bones. This overlapping is always quite characteristic of the particular mechanism of the presentation, the bone which engages last at the brim sliding under the other and being more or less deformed by the pressure of the pelvic walls.

3. A new theory as to the position of the foetus in utero.

Under this title, Murdoch Cameron (*Brit. Med. Journ.*, February 29, 1896) gives the result of his experience of the position of the placenta as observed in cases where Cæsarean section has been performed. He does not discuss the reasons for a vertex or a breech presentation, but attempts to explain the factors that determine whether a child *in utero* is in a dorso-anterior or dorso-posterior position. He has found that, in cases of Cæsarean

section, the placenta is attached upon the anterior wall of the uterus in dorso-posterior positions, and upon the posterior wall in dorso-anterior positions. The child thus assumes a definite posture in its relation, not to the pelvis, but to the site of the placenta. Such being the case, we can readily understand how this arrangement favours the well-being of the child during labour, as then during a uterine contraction the back of the child can apply itself to the uterine wall with advantage, whereas if the placenta intervened, asphyxia would result, more especially after the membranes had ruptured. The head of the child in the ninth month is generally near the brim, with the body dorso-anterior. A glance at the following table shows the statistics of various observers :—

—	First Position. (O.L.A.)	Second Position. (O.D.A.)	Third Position. (O.D.P.)	Fourth Position. (O.L.P.)	Not Classified.
Naegele	70·00	—	29·00	—	1·00
Naegele the younger .	64·64	—	32·88	—	2·47
Simpson and Barry .	76·45	0·29	22·68	0·58	—
Dubois	70·83	2·87	25·66	0·62	—
Murphy	63·23	16·18	16·18	4·42	—
Swayne	86·36	9·79	01·04	2·80	—

The relative frequency may be put down as :—

First Position. (O.L.A.)	Second Position. (O.D.A.)	Third Position. (O.D.P.)	Fourth Position. (O.L.P.)
Per Cent.	Per Cent.	Per Cent.	Per Cent.
67	10	20	3

If Murdoch Cameron's theory is correct, this would give us—by adding the first and second positions together and likewise the third and fourth—the placenta on the posterior wall in 77 per cent., and on the anterior wall in 23 per cent. In Vienna, out of thirty-two cases of Cæsarean section, twelve had the placenta in front ; this, along with Cameron's experience, which is 23 per cent. anterior and 77 posterior, gives 70 per cent. in which the placenta is posteriorly situated, and 30 per cent. in which the placenta is anteriorly situated. At Heidelberg, in 161 cases of pelvic presentations, 75 per cent. were dorso-anterior and 25 per cent. dorso-posterior.

Upon comparison these figures will be found almost alike, thus :—

Cranial	...	...	77	per cent.	placenta posterior
"	...	...	23	"	" anterior
Pelvic	...	...	75	"	" posterior
"	...	...	25	"	" anterior
Cæsarean section	...	...	70	"	" posterior
"	"	...	30	"	" anterior
"	"	(Cameron)	77	"	" posterior
"	"	"	23	"	" anterior

VII.—THE NEW-BORN INFANT.

The weight development of prematurely born children.

In a thesis for the M.D. degree of the Paris Faculty (July, 1895), Potet supplies some instructive information on this subject. His researches bear upon 173 infants born between the periods of six and a half to eight months of gestation, who left the Paris Maternity alive and well after an average sojourn for the six-and-a-half-month children of eighty-two days, and for the eight-month children of twenty-eight days. Of the fifty-six children born at six months and a half, eleven survived (mortality 80·4 per cent.). The average daily gain in weight was 9·4 grammes. Of 131 infants born at seven months, 41·9 per cent. survived, the average daily gain of weight being 11·5 grammes. Of fifty-three children born at seven months and a half, 69·9 per cent. survived, and the average daily gain of weight was 13·8 grammes. Finally, of 110 children born at eight months, 64·5 per cent. survived, and the average daily weight-gain was 22·8 grammes. The following table shows the average body-weight at birth :—

1,408	grammes	at	6½	months.
1,700	"	"	7	"
1,900	"	"	7½	"
2,150	"	"	8	"

The loss in weight during the first three days of extra-uterine existence is not more marked than in infants born at term, but is serious, owing to restoration to the original weight being a more prolonged business, and it is during this period that the mortality is the heaviest. The offspring of parents free from hereditary taint are, however, more resisting. The gain in weight begins later and proceeds at a slower pace the more prematurely the child is born.

DISEASES OF THE SKIN.

BY MALCOLM MORRIS, F.R.C.S.ED.,

Surgeon to the Skin Department, St. Mary's Hospital.

THE past year has not been marked by any striking progress in the therapeutics of the skin. No distinctly novel method of treatment has been introduced, and no new remedy of any particular importance has been added to the stock which the dermatologist already had at his disposal. Even the invention of the enterprising manufacturer has been less productive than usual. It has, in short, been a year of quiescence in the dermatological world, but not therefore of stagnation. The International Congress of Dermatology which took place in London in August was the most brilliant meeting of the kind which has so far been held; from the scientific point of view much of its work was of the highest value, and in its social aspects it was not less successful. But the discussions, papers and demonstrations were almost wholly devoted to the elucidation of pathological problems and to the consideration of the nature and causes rather than the treatment of diseases of the skin; and the work of a directly therapeutic character was inconsiderable, not only in quantity but in quality. The same thing may be said of the other—from the dermatological standpoint less important—congresses that have been held during the last twelve months: that of the British Medical Association at Carlisle, in July; that of the American Dermatological Association at Hot Springs, Va., in September; and that of the *Versammlung deutscher Naturforscher und Aerzte* at Frankfort-on-Main, in the same month. In the following pages are gathered the gleanings from the whole field of dermatological literature; if they do not contain anything of an epoch-making character, they may yet be of use in supplying some hints to practitioners.

It will be convenient to consider first the methods of treatment that have been adopted in various diseases; and secondly, the new drugs, or novel uses of drugs already known, that have been proposed.

I.—DISEASES.

Lupus.

The inoculation of erysipelas toxins with a therapeutic purpose has been used in the case of malignant growths by **Coley**, **Emmerich** and **Scholl**, and others, but on the whole the results so far cannot be called encouraging. The same method has more recently been employed in the treatment of lupus. On December 12, 1895, **Hallopeau** reported to the Société de Dermatologie the case of a woman who six years before had been cured of lupus by an intercurrent attack of erysipelas. In conjunction with **Roger** he then tried intradermic injections of erysipelas toxins in lupus (*Presse Méd.*, April 8, 1896, and *Ann. de Derm. et de Syph.*, June, 1896), but without any decisive result. **Hallopeau** is, however, convinced (as I gather from a communication made by him to the London Congress) that erysipelas has a curative effect on lupus, the causative agent itself being more effective than toxins obtained therefrom by culture. **Hallopeau** thinks that the danger of erysipelas can be so greatly diminished by the use of ichthyol, that he would not hesitate to propose the treatment to an intelligent patient who had been warned of the risk which he might run.

Thibierge, on the other hand, looks upon it as so dangerous that he considers it culpable to speak of treating lupus by the inoculation of erysipelas. **Besnier** had previously (*Ann. de Derm. et de Syph.*, t. vi., p. 1113, 1895) spoken strongly of the danger of the method.

I have no experience of the treatment in lupus, though like most other practitioners I have several times observed the beneficial effect of an intercurrent erysipelas in stimulating the healing of wounds and sinuses. The practical difficulty seems to me to lie in what may be called the regulation of the dosage.

At the London Congress of Dermatology **Campana**, of Rome, stated that he had found that tuberculin causes resolution of the inflammatory infiltrations of lupus, but does not prevent relapses. According to the researches of **Caruccio** and **Brocchieri**, tuberculin acts as a chemical irritant, setting up an acute inflammation which takes the place of the chronic inflammation of tuberculosis; the acute dermatitis caused by tuberculin resembles that caused by chrysarobin, and the mechanism of its action is the same.

Moty (*Bull. Méd. du Nord*, May 8, 1896) treats lupus by injections of camphorated naphthol. After aseptifying the skin, he pushes obliquely into the lupus tissue the needle of a Pravaz syringe full of camphorated naphthol, and injects half a drop of the

liquid into the centre of the nodule. Two or three pricks are made at each sitting, and one or two sittings are held each week. In the larger nodules the injection gives rise to the formation of a small black, dry eschar; when this separates, a supple and healthy cicatrix is left. In the small nodules only slight inflammation is produced, and the new growth shrivels up more or less rapidly.

Léon Derville (*Journ. des Sciences Méd. de Lille*, January 18, 1896) deals with isolated nodules of lupus in the case of patients who object to the use of the thermo- or galvano-cautery as follows: A Vidal's scarifier is gently pushed into the centre of the nodule until arrested by the cicatricial tissue surrounding the nodule, and then rather rapidly rotated, a manœuvre which is facilitated by the handle of the instrument being hexagonal. The lupus tissue is thus torn open and a small crystal of chloride of zinc is inserted into the opening; hæmorrhage is thus at once arrested, and at the site of the puncture a small black point surrounded by a white eschar is seen; this dries up, forming a crust, under which cicatrization takes place; the crust usually falls off from the twelfth to the fifteenth day, leaving only a small red spot. The chloride of zinc, however, is apt to leave an irregular projecting cicatrix. The treatment is, accordingly, not well adapted for parts of the body which are usually uncovered. Derville claims for his process the following advantages:—

1. It is painless, and is well tolerated, even by children, without any form of anæsthesia.
2. It does not interfere with the patient's occupation.
3. It is not of long duration, and exercises no harmful influence upon the cicatricial tissue in the neighbourhood.

A complete cure is to be expected only when the nodules are small and superficial. Otherwise the process may have to be repeated once or twice, after an interval of fifteen days.

Other forms of tuberculosis of the skin.

Hallopeau (*Internat. Congr. of Derm. and Syphilog.*, London, 1896), though admitting that tuberculin has so far been a failure in the treatment of cutaneous tubercloses, nevertheless thinks that it is in that direction that the means of arresting or curing such conditions should be sought for. I have myself during the past year used thyroid extract as an adjunct to surgical procedures in some cases of tuberculosis of the skin (scrofuloderma) with very decided advantage. My own experience leads me to believe that it is in such cases, and not in lupus or psoriasis, that this remedy is of most real use.

Bier's congestive method of treating tuberculous disease of the extremities has found a certain amount of favour among surgeons. **Woltersdorf** (*Deut. med. Woch.*, No. 41, 1896) recently tried it with success in localised tuberculosis of the skin. Having wounded the fourth finger of his left hand while making a *post-mortem* examination of a tuberculous subject, there developed after some time an *post-mortem* wart at the site of the wound; the related lymphatic glands were not affected. Prof. Heidenhain diagnosed a local tuberculosis and proposed immediate extirpation; this for various reasons was not carried into effect. In the meantime Woltersdorf, having become engaged to be married, conceived the idea of utilising the engagement-ring as a means of carrying out Bier's treatment on his diseased finger. The ring was put on with great difficulty, and the wearing of it was at first extremely painful and was accompanied by cyanosis and anæsthesia, but at the end of four months, without any other treatment whatever, the lesion was completely cured. At the date of report the cure had been maintained for two years. Woltersdorf proposes to try the same treatment in other cases of tuberculosis of the skin—for instance, by ligature of the facial vein in lupus of the face.

Potassium cantharidinate has also been used with satisfactory results in the treatment of cutaneous tuberculosis. **Gaston Branthomme** (*Bull. de la Soc. Franç. de Derm. et de Syph.*, Jan., 1896), after failure of curetting, used injections of a solution containing pot. canthar., 0·001 gramme; cocain. hydrochlor., 0·1; aq. destill., 10. One cubic centimetre was used in each of nine injections, covering a period of three weeks. The injections were painful, causing rise of temperature twice and abscess once. The patch was completely cicatrised in four weeks.

Lupus erythematosus.

Lamb's serum has been used in the treatment of lupus erythematosus by **Legrain** (*Ann. de Derm. et de Syph.*, January, 1896). The patient was a woman aged thirty-two, who for two years had had typical bat's-wing lupus erythematosus of the face. For more than a year all the local measures used in such cases had been tried in vain; scarifications had produced a very slight and transient improvement; iodide of potassium had been given several times without benefit. Legrain, who had for some time been trying the effect of injections of normal serum in various obstinate skin affections, gave two injections of lamb's serum of 10 cubic centimetres each at an interval of five days, two months after all treatment had been discontinued. Three days after the first injection the patches became paler, and ten days

after the second they disappeared without leaving a trace. This was in June, 1895, and the cure had been maintained up to the date of report.

The most obvious comment on this case is that, granting that the agent mentioned really did effect a cure in this particular case, "one swallow does not make a spring."

At the Congress of Scientists and Physicians which met at Frankfort-on-Main in the autumn, **Josef Schutz** expressed the opinion that the remedies generally used in lupus erythematosus are too irritating. He recommended a very weak solution of arsenic (1 in 400—600, or Fowler's solution in one-fourth to one-sixth of its strength) as a local application. This should be painted over the affected part twice a day. In about a week the application causes slight reaction, and the swollen tissues should then be covered for a week with a protective paste. The arsenical lotion and the paste should be used alternately for several weeks. Schutz has so far treated nine cases in this way, with the result that a cure has been effected on the average in eleven weeks.

Eczema.

This disease, as usual, has been the subject of several papers by dermatologists and practitioners in various countries, but, as regards treatment, these lucubrations contain little but a few variations of well-worn themes. At the annual meeting of the American Medical Association a discussion took place on the question, What effect do diet and alcohol have upon the causation and course of the eczematous affections and psoriasis? **J. C. White**, of Boston, said the importance of the bearing of diet upon eczema had been shown to be greatly over-estimated. Articles of food that increased the cutaneous circulation or excited the nervous system, and so exaggerated a pruritus, certainly had a bearing upon eczema. The diet in this disease should be the same as in all other inflammatory processes. As he does not recognise any connection between eczema and any so-called diathesis, he would deny the efficacy of systems of diet based upon the existence of such diathesis. He recognised both a direct and an indirect influence on the maintenance of the disease by alcohol, but did not regard it as an important factor in its causation. Personally, he believed that diet and alcohol had no influence on the causation and course of psoriasis in general, but in exceptional types they had a temporary importance. The successful treatment of those diseases must remain largely empirical.

Fordyce, **Dühring** and **Morrow** questioned whether food could be regarded as a cause of eczema. I have several times expressed disbelief in the influence of diet on this disease.

O. Lassar (*Derm. Zeitschr.*, Bd. ii., Hft. 6, Berlin, 1895; *Brit. Journ. Derm.*, April, 1896) insists on minute attention being bestowed on local ætiological factors; even where the research is negative, treatment should be conducted as if a local cause had been discovered. He lays stress upon the value of baths containing tar, or taken after tar has been well painted over the affected parts. The object of this is to disinfect the skin as a preliminary to treatment, and Lassar considers tar to be one of the best medicaments for the purpose. Afterwards Venetian talc is to be dusted copiously all over and around the affected area. If notwithstanding this treatment the disease still persists, he considers that the irritant which may originally have produced it was sufficiently intense and prolonged to have penetrated into the lymph lacunæ of the lower epidermal layers. In this way he accounts for the beneficial effects of greasy applications in the eczemas that are chronic, and where moisture is not apparent to the naked eye. He attributes the remedial effects of his well-known salicylic acid paste to the fact that the fatty vehicle carries the antiseptic into the skin. The fatty basis is paraffinum molle (vaseline), and has the advantage of undergoing no decomposition. He still recommends the continuation of the use of tar-baths. Should the paste cling too freely, a mixture of zinc oxide, 60 parts, and olive oil, 40 parts, may be used instead. Finally, for obstinate inveterate forms, Lassar speaks well of the application of Wilkinson's ointment, introduced originally as a remedy for scabies. Its composition is as follows:—

R Sulphuris,
 Olei Rusci āā 1 part by weight.
 Cretæ preparatæ $\frac{1}{4}$ " "
 Saponis mollis,
 Paraffini mollis āā 2 parts, " "

In connection with the subject of washing in eczema, I may refer to a method suggested by **Phillips** (*Brit. Med. Journ.*, January, 1896, p. 145). This is the use of olive or sweet oil upon pledgets of cotton-wool. Sometimes in pustular varieties the author makes use of soap and water. This method of washing eczematous parts with olive oil has been used by other practitioners independently, and I believe with satisfactory results.

Gomez (*Giorn. Ital. d. Mal. Ven. e d. Pelle*, part i., 1896) speaks favourably of ichthyolvasogen in the treatment of eczema. From his experience of the remedy in twelve cases he concludes that it is to be preferred to ichthyol ointments made with vaseline, owing to its rapid and energetic effect. It can advantageously be substituted for any of the anti-eczematous ointments in ordinary

use, including Lassar's paste, and it often succeeds where these fail. In a strength of 10 per cent. ichthyolvasogen has a drying effect; in a more concentrated form (20 per cent.) it stimulates secretion. It is therefore useful both in dry and in "weeping" eczema.

Urticaria.

Under this head there is at least what looks like a new idea to report. It is very pretty in theory; whether it is likely to bear the test of everyday practice is another question, to which only experience can supply an answer. The idea comes from **Prof. A. E. Wright**, of Netley (*Brit. Journ. Derm.*, March, 1896), who reports good results from the administration of calcium chloride in two cases of urticaria. Persons whose blood coagulability is diminished appear, according to Wright, to be particularly liable to urticaria, which is due to increased transudation—that is to say, to "serous hæmorrhage" into the skin. He has produced urticaria upon himself by diminishing his blood coagulability through taking inordinate doses of calcium chloride; when a boy also he often developed urticaria after eating acid fruits, which diminish the blood coagulability by abstracting lime salts from the blood. By correction of the defect of blood coagulability it should therefore be possible to control the transudation. Wright thinks that he has succeeded in doing this by the administration of calcium chloride in two cases of urticaria of which he gives details. The first case was that of a man aged eighty-four, who for six weeks had suffered from severe and persistent urticaria accompanied by insomnia and great cardiac weakness. Thirty grains of calcium chloride were administered, instructions being given that the dose should be repeated at bedtime and again the next morning. All other medicine except sulphonal was discontinued. The patient passed a decidedly better night; but there was no notable change in the rash. Twenty-grain doses of calcium chloride were prescribed three times a day; on the third day the patient was wonderfully better, itching was very much less, and the eruption had to a considerable extent disappeared. The treatment was continued, and four days later the skin had become soft and smooth, the itching had practically ceased, and the patient was rapidly regaining strength. The second case was that of a private soldier in whom urticaria developed after the injection of diphtheria antitoxin; rapid subsidence followed administration of calcium chloride. This case, however, does not seem to me to prove anything as to the efficacy of the remedy, as the eruptions caused by antitoxin tend to vanish as rapidly as they come without any treatment. Wright suggests that large doses of the calcium chloride should be

administered at the outset to supply the deficiency of lime in the system and to bring the patient rapidly under the influence of the drug. Afterwards it would be well to reduce the doses so that excessive quantities of lime shall not accumulate in the system. He thinks that the same treatment may also be useful in "weeping" eczema.

Carl Berliner (*Therap. Monats.*, January and March, 1896) has found the following treatment beneficial: The urticarial lesion and the surrounding skin should be moistened with cold water, the tip of the finger being used to apply the moisture; then, picking up a few granules of common salt with the moistened finger, the affected skin is once more gently rubbed for the space of ten to fifteen seconds to half a minute. A feeling of coolness is immediately imparted to the skin, followed by relief from itching and the disappearance of the pomphus. It is well to apply subsequently a little zinc oxide ointment, or rice or starch powder, to the part.

Ringworm.

Under this head there is an addition to the numerous "specifics" for ringworm to report. This is formic aldehyde or formalin, and its prophet is Alfred Salter, House Physician of Guy's Hospital (*Brit. Med. Journ.*, Oct. 17, 1896). The use of the agent for that purpose was suggested to him by experimental evidence of its great parasiticide and penetrating power. Hairs epilated from the scalp and subjected both to the vapour and to the direct action of the solution showed "very emphatic results." Experience in actual practice amply justified the expectations raised by the experimental results. Salter treated forty cases of ringworm of the scalp from the out-patient department at Guy's Hospital. The preparation most used was Schering's "formalin" in full 40 per cent. strength, though in the later cases formaldehyde of English manufacture was employed. The fluid was vigorously rubbed in with a largish brush or mop for ten minutes, the hair having been shaved round the margin of the patches. The application was repeated every other day on four occasions and then entirely discontinued. In some patients the head was painted every day for four successive days. Of the forty cases, only five required repainting owing to non-eradication of the disease, and in these the fault lay, not with the remedy, but in the fact that, owing to the struggles of the child, no proper application could be made. The ages of the children treated ranged from four to twelve, and the extent of the disease varied from a small strictly localised patch to areas which were practically co-extensive with the whole scalp. Microscopical examination

was always made before commencing the treatment, and the actual presence of the trichophyton verified, whilst before pronouncing any case cured microscopical examination was again made. In thirty-eight of the cases the fungus presented the characters of trichophyton microsporon. Formalin thus applied induces discomfort and irritation of very brief duration rather than actual pain, and does not vesicate the scalp as it does the skin elsewhere. Only three cases showed any suppuration after its use, and in these the process was slight, and did not destroy any of the follicles. It produces, however, a thick crust, just as weaker solutions cause desquamation upon the skin of the arm, and the subsequent application of some emollient is advisable to accelerate the removal of this exudation. Growth of healthy hair commences immediately, and in three or four weeks the denuded patch is covered with hairs $\frac{1}{6}$ in. long. Salter calls attention to an occasional complication of the treatment. In six cases œdema of the face was noted some hours after the painting. In one boy this was so extensive as completely to prevent vision from swelling of the eyelids, and the forehead pitted $\frac{1}{2}$ inch on pressure. The skin, however, was neither hot nor red. The condition is probably analogous to that produced by a nettle sting on a large scale. Salter points out that the active toxic agent in the nettle is formic acid, and it is thus closely related to the substance now under discussion. The occurrence of this œdema renders it advisable either to deal with limited areas at a time, or to warn the parents of the possible result if the whole scalp is to be attempted at once.

Salter is not without honour in his own country, if one may judge from the following note which appeared in the *Guy's Hospital Gazette* of October 26 :—

“We were glad to notice in the *British Medical Journal* of a fortnight back a paper by Mr. Alfred Salter, on the treatment of ringworm by formic aldehyde, or formalin. This treatment is now so well known at Guy's, and has had such a conspicuous success, that it should be part of the ordinary practice of every old Guy's man. There seems no doubt that it is the one and only treatment for the disease, especially in obstinate and hitherto incurable cases.”

I am sorry to say that I have seen the rise and fall of so many “one and only” treatments for ringworm that I have grown somewhat sceptical in the matter. Thinking it my duty, however, to try all things that offer a reasonable possibility of usefulness, I have employed formalin in several cases of ringworm, and I must sorrowfully report that the results which it has given

do not justify the enthusiasm with which the new treatment is regarded in the place of its birth.

At a meeting of the French Society of Dermatology and Syphilography, Sabouraud (*Ann. de Derm. et de Syph.*, January, 1896) brought forward a case of onychomycosis affecting all the nails of the right hand. He kept the nails constantly covered with a wet dressing containing iodine, the following solution being used :—

Iodine	...	...	...	1 gramme.
Iodide of potassium	...	...	...	2 grammes.
Distilled water	...	...	...	1 litre.

The dressings were kept in position by the use of caoutchouc finger-stalls.

The patient was brought before the Society after four months of this treatment, when the nails could be separated into two sections divided by a transverse line, a peripheral part still diseased, and the more central portion cured. The trichophyton had been checked in its growth since the dressings had been used, and the disease was in process of cure.

Psoriasis.

In spite of thyroid extract, psoriasis continues to be largely beyond control by treatment. Paschkis and S. Grosz (*Wien. klin. Rundschau*, Nos. 36—39, 1896) have used iodothylin with results which they consider satisfactory ; relapses, however, took place in most of their cases just as happens after thyroid extract. Brault (*Ann. de Derm. et de Syph.*, August, September, 1896) has tried mercurial injections, but with merely temporary success. He reported to the French Society of Dermatology and Syphilography (July 11, 1895) two cases treated exclusively by injections of yellow oxide of mercury. In both patients, after the third injection, desquamation and marked clearing up of the patches resulted ; perseverance in the same line of treatment brought about what appeared to be a complete cure. On July 9th, 1896, however, he reported to the same society that in one of the cases relapse had occurred after five months, and in the other after one. In a third case he has since tried a mixed treatment, injecting the yellow oxide and giving iodide of potassium internally. The patient was a healthy young man aged twenty-three, suffering from typical psoriasis of a year's duration. Four injections, one of 5 and three of 10 centigrammes of yellow oxide, were given, and iodide of potassium in daily doses, gradually increased from 1 to 6 grammes. The disease cleared up in five weeks, but eight months later relapse took place. More recently Brault has tried the injection of calomel in two cases of "dartrous" psoriasis

—one generalised, the other in the form of large patches occupying almost exclusively the two lower limbs—giving iodide at the same time up to 10 grammes daily; in both cases the eruption disappeared after six injections. In order to give the method a fair trial two further injections of 10 centigrammes were given after the disappearance of the patches, and iodide of potassium in daily doses of 5 grammes was given for some time. The treatment lasted altogether three months. Brault is by no means confident, however, that the benefit will be permanent.

Scabies.

Sulphur is, as everyone knows, a specific in scabies, but there are certain objections to its use which would make many welcome a pleasanter remedy if its efficacy could be guaranteed. Balsam of Peru, which has been used by Peters, of Prague, Burckhardt, Nothnagel, and Rossbach, and by Tantarri, of Naples, has lately had a strong confirmation of its credentials as a cure for itch.

Jullien and Descouleurs (*Ann. de Derm. et de Syph.*, April, 1896) record their experience of it in a paper based on eighteen years' experience, both in private and in hospital practice, and in particular on a study of cases observed at St. Lazare during five years. The total number of cases in which the treatment was employed was over 300. Descouleurs placed six acari in contact with the balsam, and in ten minutes two were killed, in twenty minutes three others died, the last dying soon afterwards. He concludes that the volatile oil which is the essential constituent of balsam of Peru, *cinnamein*, kills the parasite by asphyxia as well as by a kind of corrosive action. The method of application is extremely simple. No previous washing with soap is necessary; it is sufficient to paint a slight coat of the balsam over the skin and to rub it in without violence. The application is made at night, and a cleansing bath is given the next morning. The remedy causes no irritation or other inconvenience, and can therefore be used longer if necessary. The treatment was successful in all the cases in which it was used, including some severe and old-standing cases of relapse that had resisted the classical treatment at the St. Louis Hospital. The authors think that the treatment is "imperatively indicated" in the subjects of extensive suppurative skin disease—impetigo, ecthyma, furunculi—and in eczematous subjects, in weakly persons, in sufferers from heart disease and albuminuria, in certain cases of pregnancy, in women at the periods, and in all persons for whom baths are for any reason undesirable. It is particularly useful in the case of nurslings with delicate skin in whom violent rubbing gives rise to

dermatitis or strophulus. The authors know of no contra-indication of the treatment, which can be carried out by the patient himself, which is not unpleasant in application, and has the further advantage of being very cheap.

Feulard uses balsam of Peru in the treatment of itch in young children in the form of a pomade, with which inunctions are made several nights consecutively. He has also found the remedy efficacious in the treatment of some old eczemas, especially squamous eczemas of the scalp.

Sycosis.

V. Tilé (*Vratch*, 1895, Nos. 21, 22, and *Ann. de Derm. et de Syph.*, May, 1896) recommends the following method of treating sycosis, which he first used on himself, and which he has since employed in a number of cases, with unfailing success. The diseased hairs should not be shaved, as this irritates the affected part, and inevitably leads to infection of neighbouring regions by the inoculation of pus from furunculi laid open by the razor. It is sufficient to cut the hairs close every three or four days. He does not epilate. The pustules are incised separately, squeezed out, and then washed with a 1 per cent. solution of sublimate. When all the small foci have been opened, the whole area is again washed with sublimate. This is at first done two or three times a day; then as the pustules become less numerous, it is, done once a day, once every two days, and so on, till for at least six weeks no trace of the disease can be seen. At night the diseased part is covered with Hebra's oxide of zinc pomade, and from time to time with Rosenthal's paste. By this treatment Tilé has cured the most obstinate cases in from one to three months.

Pruritus.

A not inconsiderable part of the therapeusis of the skin is the relief of itching. The rational and the most effectual way of doing this is to discover and remove or neutralise the cause, local or constitutional; that, however, is not always possible. Therefore any additional resource against this troublesome symptom is welcome. I note two or three suggestions that have been made during the year. **De Wannemaeker** (*Belgique Médicale*, November 5, 1896) has for some time past been using salophen (a compound of salicylic acid and acetyl-paramido-phenol) in cases of pruritus, secondary as well as primary, with results which he describes as "very encouraging." He gives the drug internally in doses of 60 to 75 grains in the day. **Savill** (*Lancet*, August 1, 1896) finds calcium chloride, suggested by Wright as a remedy for urticaria, (see p. 363), useful in pruritus, whether primary or secondary. It

should be given after meals in a wineglass of water. The doses should be considerable, not less than 20 grains three times a day, and they should be gradually increased. Thirty and even 40 grains may often be administered with success when smaller doses fail. The diet should be regulated at the same time, no beer, sugar, or sweets being allowed, and meat only in moderate amount. The bowels should also be kept acting freely. The remedy should be continued from one to three weeks after all symptoms have disappeared. In most of the cases in which this treatment was employed a definitive cure is said to have been effected.

Ellice M. Alger (*New York Polyclinic*, 1896), referring particularly to senile pruritus, speaks well of the use of alkaline diuretics. A very good combination is as follows:—

R	Sodium bromide	...	...	...	...	5ij.
	„ iodide	...	...	...	...	5j.
	„ salicylate	...	...	...	...	5ij.
	„ acetate	...	...	...	...	5j.
	Inf. gentian. ad	...	...	...	...	3ij.
M.	Sig.	5j in water an hour after meals.				

If the pruritus is local, carbolic acid is one of the best anti-pruritics, and Bronson's formula is the best known to the author:—

R	Liq. potass.	...	...	...	...	5ij.
	Ac. carbol.	...	...	...	...	5iv.
	Ol. lini ad	...	...	...	...	3ij.
	Ol. bergamot.	...	...	...	...	gtt. x
M.	Sig.	For external use.				

Where the pruritus is almost universal this formula will be too strong, and other treatment must be devised. Especially grateful to some patients are lotions containing about 1 drachm of acetic acid to half a pint of water, or about the same proportion of bicarbonate of soda. These can be used as frequently as necessary, care being taken to dry the body without using enough friction to re-arouse the skin. After the bath the skin can be smeared with vaseline or some other protective. In some cases aqueous solutions of acetanilide, 1 drachm to 1 ounce, will give relief for hours.

The following ointment is at times very useful:—

R	Resorcin	...	...	...	...	5ss.
	Ichthyol	...	...	...	...	5j.
	Lanolin...	...	...	...	...	3ij.
M.	Sig.	For external use.				

Mycosis fungoides.

At the meeting of the Society of German Scientists and Doctors, held this year at Frankfort, **Wolters**, of Bonn, reported

seven cases of mycosis fungoides, as to five of which he gave the results of thorough clinical, pathological, and bacteriological examinations. In all the five cases there were multiple glandular tumours, which disappeared under arsenical treatment, and returned when it was suspended. The blood showed leucocytosis 1 in 100, 200, or 300, and micro-organisms—staphylococcus, pyogenes aureus, citreus, albus were found. In treatment Wolters uses arsenious acid or, better, arseniate of sodium in large doses of 30 milligrammes daily; this he has always found effective. Recurrences, however, take place after some months, but the symptoms always yield to arsenic. Some of the patients have been under treatment at intervals since 1894.

Karl Herxheimer confirmed the statements of Wolters. The effect of arsenic had been very marked in a case of mycosis fungoides *d'emblée* under his care.

Hyperidrosis and bromidrosis.

Mr. Rudyard Kipling gives the soldier whose feet are sore from marching the advice—

“You drop some tallow in your socks, an’ that will make ’em well.”

The method, though hardly to be called cleanly, is effective enough, but chiefly as a preventive. The famous *Fusspulver* of the German Army (which consists mainly of salicylic acid and chromic acid) are also most useful. E. R. W. Frank, however, says (*Monatsh. f. prakt. Derm.*, November 1, 1896) that tannoform (see p. 372) is superior to either. On December 3rd, 1895, he reported to the Berlin Dermatological Association a series of about fifty cases of hyperidrosis and bromidrosis (feet and arm-pits) in which he had used the substance with complete success. Since then he has employed it in a good many more cases with equally good results. The secretion diminishes after the first application of the powder, and the macerated parts quickly get well. In bromidrosis the smell ceases. The treatment is equally successful whether it is the foot or the armpit that is the seat of the affection. Adler (*Prag. med. Wochenschr.*, No. 39, 1896) recommends daily applications of a solution of formalin (Höchst) as the surest and most effective treatment. Frey (*Sem. Méd.*, October 28, 1896) finds that in bromidrosis of the feet washing the soles and interdigital spaces once or twice a day with a 2 per cent. solution of formalin causes the fetid odour to disappear in a few days. The same solution should be used to wash out the inside of the shoe, etc., especially the soles, which should be carefully dried after each washing.

L. Heusner (*Therap. Monatsh.*, February, 1896) recommends the application of the following solution to the affected areas by means of cotton-wool, which may subsequently be destroyed :—

R	Balsam of Peru	...	...	1 per cent.
	Formic acid	...	...	5 „
	Chloral hydrate	...	...	5 „
	Alcohol	...	...	89 „

In cases of slight severity this application may be made without the addition of chloral, but in the severer cases of hyperidrosis of the feet, hands, and the axillæ, the addition of the chloral makes the solution much more effective. If a still more powerful action is desired, 1 per cent. trichloracetic acid may be added. Trichloracetic acid used alone in the form of a 1 per cent. to 2 per cent. solution in alcohol makes an excellent application to the feet in cases of hyperidrosis such as are met with in soldiers on the march.

Intertrigo.

Brault (*Ann. de Derm. et de Syph.*, April, 1896) has for more than a year used chromic acid in intertrigo with good results. When there is great irritation he first applies some weak antiseptic solution a few times; then, after careful washing and drying, the affected parts are painted with a 3 per cent. solution of chromic acid; afterwards some bland powder is applied. The application is repeated at intervals of three or four days, not more than two or three being generally required. The method is also useful in preventing recurrence by causing a kind of tanning of the integument.

II.—DRUGS.

Of new remedies, or even of novel applications of old ones, there is, as already hinted, very little to record. It has been stated (p. 360) that lamb's serum has been used in lupus erythematosus. **Serum** (from the rabbit) has also been used in leprosy by **Deluca** (*Giorn. Ital. d. Mal. Vener.*, xxxi., 2) with some apparent benefit; blood serum from a leper in whom the disease was in a latent state was used in another case without any visible result. **J. de Dios Carasquilla**, in a communication to the Colombia Academy of Medicine, stated that he had employed serum from horses, previously immunised by means of serum taken from lepers, in a hundred cases of leprosy with good results. **Tuberculin** has been used by **Arnaud** (*Ann. de Derm. et de Syph.*, March, 1896) in a case of mixed leprosy at Tunis; great improvement took

place, which persisted when the patient was seen again more than two and a half years later. **Thyroidin** has been tried in eight cases of Hebra's prurigo by **A. Dobrowsky**, in Prof. Monti's Clinic of Children's Diseases at Vienna (*Semaine Médicale*, October 28, 1896). Itching ceased, eruptions rapidly disappeared, and the general condition was greatly improved. Discontinuance of the drug was, however, followed by relapse in all the cases. **W. Sarubin** (*Vratch*, Nos. 25 and 26, 1896) tried Merck's **thyreo-iodinum siccatum** in three cases of psoriasis and one of non-parasitic syphilis; in no single case was the slightest influence on the skin affection noticed. The thyroid treatment of psoriasis has lately been discussed by **H. S. Purdon** (*Dublin Journ. Med. Science*, November 2, 1896); he has tried it in six cases, in one of which the treatment had to be discontinued; in two the eruption was made much worse; in two there was no improvement; and in one an apparent cure was effected which has been maintained for upwards of two years. These results do not seem very brilliant, and confirm me in the opinion, which I have more than once expressed, that thyroidin is not a trustworthy remedy in psoriasis.

Tannoform, a compound of formaldehyde with tannin, is a light-yellowish powder without smell or taste. It has been used by **De Buck** and **De Moor** (either pure or as a powder in a vehicle of talc or starch, 5 gr. to 25 gr., or as an ointment with vaseline and lanolin) in various skin affections in children as well as in adults (erythema, intertrigo, hyperidrosis of palms and soles, bromidrosis, impetigo, eczema, vaccinal ulcerations), sores, indolent ulcers of the legs, bedsores, ulcerated lupus, and diabetic gangrene (*Belgique Médicale*, August 13, 1896). In all these cases the antiseptic and drying effects of tannoform were very marked, and there was no irritation of the skin.

Veiel (*Berlin. klin. Woch.*, December 30, 1895) uses **airol**, a compound of gallic acid and iodine (gallate of oxyiodide of bismuth), in the form of powder for ulcers of the legs complicated with eczema, ingrowing nails, erosions of all kinds, and broken pemphigus bullæ. It relieves pain, cleanses sores, diminishes secretion, gives granulations more firmness and less tendency to exuberance than iodoform, to which, however, it is inferior as a disinfectant. Its advantages are the absence of smell and its non-toxicity. **L. de Sanctis** (*Gazz. d. Ospedali*, November 1, 1896) has used airol in intertrigo with results which he characterises as brilliant.

Walter G. Smith (*Brit. Journ. Derm.*, July, 1896) has made experiments to determine the difference in action between **chrysarobin** and **chrysophanic acid**. He concludes that

the latter is not an efficient substitute for the former in the treatment of psoriasis.

Gaucher, at the recent Congress of the French Dermatological Society, suggested the use of acetone collodion as an excipient for **oil of cade**. The acetone partly disguises the smell of the cade oil, and the preparation enables the remedy to be applied exclusively to affected points. He has used this cade collodion successfully in psoriasis, lichenoid eczema, simple chronic lichen, nummular and seborrhœic eczema, etc. Pure oil of cade obtained from juniper and pure acetone free from water should be employed in its preparation.

Unna has lately (*Brit. Med. Journ.*, October 17, 1896) introduced a new watery varnish which he calls **gelanthum**.

The mode of preparation is as follows:—Pieces of crude tragacanth are emulsified for four weeks in the cold with twenty times their volume of water. They are then treated with steam for one day, further swollen, and finally pressed through muslin. The gelatine, on the other hand, is swollen up cold, and then filtered in Unna's steam filter after long exposure to steam pressure, which takes from it part of its power of gelatinising. The mixture of the two is allowed to swell for two days in steam. After being pressed once more through muslin, it is mixed with 5 per cent. of glycerine, some rose water, and 2 per 10,000 of thymol, in order to prevent the growth of fungi. This preparation, called gelanthum—a combination of the words "gelatine" and "tragacanth"—contains about $2\frac{1}{2}$ per cent. of each. Before closing it will be well to compare the advantages of gelanthum with the older watery varnishes. It has the following advantages:—(1) It can be better spread. (2) It dries more rapidly and with a smoother surface. (3) It feels more cooling on account of the greater amount of water it contains. (4) It keeps the drugs suspended, and distributes them more evenly on the skin. (5) It may be combined with drugs, either singly or in combination. (6) It permits the drying of hygroscopic drugs such as ichthyol. (7) It permits the addition of grease. (8) If protected from drying, it may practically be kept for ever. Unna advises that it should be used in the first instance in dry, widespread eczemas of the body, where the advantages of cleanliness, convenience, and cheapness are at once seen.

I have not had an opportunity of trying gelanthum myself, but **Galloway** (*Brit. Med. Journ.*, November 28, 1896, p. 1575) has used a similar preparation in several cases of eczema with satisfactory results.

DISEASES OF THE EYE.

BY HENRY POWER, M.B., F.R.C.S.,
Consulting Ophthalmic Surgeon, St. Bartholomew's Hospital.

I. New remedies.

George F. Suker, of Toledo, Ohio (*Annals of Ophthalm. and Otol.*, January, 1896, p. 23), recommends ephedrene hydrochlorate as a mydriatic. He claims for it that it is rapid in action, produces a nearly maximum dilatation of the pupil, which lasts for a short time only; does not interfere with accommodation, causes no change in the intraocular pressure, and is free from untoward accessory effects. Ephedrene is an alkaloid obtained from the leaves of *Ephedra vulgaris* or *E. distachya*, and is not identical with ephedren. Ephedrene forms colourless stable crystals melting at 210° C., soluble in four parts of water. The hydrochlorate is freely soluble.

Another remedy which, though not new, since it was brought into notice by Unna in 1883, has not been employed in ophthalmic disease is ichthyol. (See "L' Ittiolo," by **Paolo Luciani**, *comunicazione fatta al 1° Congresso Medico della regione Lig., Giugno, 1895, Annali di Ottalmologia, anno xxiv., fascic. 5*; and "Ichthyol zur behandlung des Trachoma," von **M. Eberson** — in Tarnow, *Sonderabdruck aus dem Aertzlichen Central-Anzeiger Wien, 1896, No. 12.*) It is claimed for it that it is an antiseptic, and is useful in ciliary blepharitis, phlyctenulæ, conjunctivitis, kerato-iritis and recurrent episcleritis.

Karl Hoor, of the Royal Hungarian University of Klausenburg (*Klin. Monats. für Augenheilkunde*, July, 1896, p. 225), recommends as a disinfectant for the eye a remedy possessing powerful microbe-killing attributes, named ethyldiamin-silver phosphate, originally suggested by J. Schaeffer. It possesses, he maintains, all the advantages and none of the disadvantages of silver nitrate. He has employed it in solutions containing from 3 to 5 per cent. of the salt three or four times daily. Such solutions occasion very little pain or irritation, do not stain the conjunctiva, and penetrate deeply into the membrane. Hence it is especially applicable to cases of catarrhal, follicular, and trachomatous inflammations of the conjunctiva. It may even be used in cases in which the cornea is implicated, as well as in iritis and cyclitic inflammations of the eye.

The same writer (*ibid.*, p. 149) also recommends nosophen or tetraiodphenolphthalein as a substitute for iodoform to dust over wounds as a disinfectant. It is superior to that remedy on account of the absence of any penetrating or persistent odour. Mackenzie Davidson (*Brit. Med. Journ.*, January 18, 1896) has used in hypopyon-keratitis, and in traumatisms of the cornea followed by infection, solutions of formalin or formic aldehyde, made by dissolving one part of formalin in 2,000 to 3,000 parts of water. In this strength it is not painful and promptly soothes irritation.

2. Strength of the different mydriatics and myotics.

Edward Jackson, of Philadelphia, in a Presidential address delivered before the Section of Ophthalmology at the meeting of the American Medical Association held at Baltimore in 1895 (reported in the *Ophthalmic Review*, January, 1896, p. 25), stated that from experiments he had made he found the weakest solution producing a perceptible effect was of pilocarpin hydrochlorate 1 in 2,000; of homatropin hydrobromate 1 in 10,000; of eserin sulphate 1 in 50,000; of atropin sulphate 1 in 500,000; of hyoscyamin daturin, duboisin sulphate, or scopolamine hydrobromate, 1 in 1,000,000. A further series of experiments was undertaken to determine the relative power of the different mydriatics in neutralising the physiological effect of a solution of eserin sulphate containing 1 to 1,000, and the relative power of pilocarpin in neutralising the action of homatropin. By a series of such tests it was found that the relative strengths of the different mydriatics were expressed in the following terms of the strength of the weakest (pilocarpin)—as mist. pilocarpin hydrochlorate, 1; homatropin hydrobromate, 4; eserin sulphate, 24; atropin sulphate, 120; hyoscyamin, or duboisin sulphate, or scopolamine hydrobromate, 300. The myotics act more quickly and lose their influence over the pupil and accommodation sooner than do the mydriatics.

3. Prevention and treatment of purulent ophthalmia in infants.

The statements made in many text-books in regard to the prophylaxis of purulent ophthalmia and its treatment in the early stages by means of nitrate-of-silver solutions containing one or two grains to the ounce of water, or of solutions of mercury bichloride in the proportion of 1 to 3,000 or 1 to 4,000, might easily lead the credulous practitioner to the belief that the last word had been said upon the subject.

A paper read before the Société d'Ophthalmologie de Paris (*Annales d'Oculistique*, t. cxv., 1896, p. 353), however, shows, with

the discussion which followed it, that the satisfactory results obtained by Credé and others have not been equally good in other hands. M. Abadie, who read the paper, called attention to the disastrous results that had frequently been reported by different observers of the employment of dilute solutions of corrosive sublimate at or shortly after birth, the cornea having become under its use infiltrated with leucocytes and ultimately opaque. Now this condition is precisely that which is characteristic of purulent ophthalmia. Hence if, by error of judgment, the use of the bichloride drops is still more vigorously pushed, the surgeon believing the opacity to be due to the disease, the results are obvious, whilst if the drops are omitted and weak atropine solution be prescribed, the cornea quickly regains its transparency. The diagnosis between the real and the fictitious malady is that the former presents itself at an early period as a circumscribed yellowish spot, which speedily leads to loss of substance of the corneal tissue; whilst in the latter the opacity is diffuse and without ulceration. In fine, M. Abadie thinks that whilst the employment of dilute solutions of silver nitrate is certainly of service when there is really infection, it should not be indiscriminately practised, since the supposed remedy may itself set up an inflammatory condition. Several speakers were in accord with M. Abadie.

4. Treatment of granular lids.

M. A. Trousseau (*Annales d'Oculistique*, t. cxv., June, 1896, p. 422) observes that there is still room for improvement in the treatment of this exasperating affection; for, of the many plans that have been proposed, few or none appear to be constantly successful. He has recently, for several months, had the opportunity of making comparative researches on different methods, and, amongst others, has applied cauterisation with chromic acid, brushing over with creosote and inunction of steresol, without benefit, nor have any of the antiseptic fluids—and he believes he has tried nearly all—proved more effective. At the commencement of his researches he was struck by the rapid improvement that resulted from the contact of formalin applied for a short time every four or five days. But he soon found that, although the granulations soon disappeared, the formalin acted injuriously on the cornea. He found that chloride of zinc in saturated solution is well borne by the membrane; it attacks the granulations vigorously, but its action is soon spent, and it has not in reality any advantage over other caustics. The injection of the fluid with a perforated needle at various spots did not prove of any service. Ordinary petroleum apparently did harm. The best results were obtained from the application of tincture of

iodine, and after various trials he satisfied himself that a mixture of one-half glycerine and one-half tincture of iodine, applied over the whole internal surface of the lid every day, or every second day, according to the degree of inflammation excited, was really useful. The membrane soon becomes smooth, and presents a varnished aspect. The pannus of the cornea rapidly disappears, and it seems to be at least as serviceable as sulphate of copper and glycerine in the proportion of 7·5 grains of copper sulphate to 1,000 of glycerine, which still remains a very useful remedy. *Apropos* of this disease, M. A. Nicati (*Annales d'Oculistique*, t. cxv., 1896, p. 348) draws attention to the value of the finger-nail, especially of the index finger, in replacing the plate of Desmarre's forceps, whilst with the long finger-nail of the other index finger the several granulations can be distinctly felt, and the nail made available for the expression and *râclage* of the granulations.

5. Immunity from trachoma.

The origin of trachoma, or granular lids, and its treatment has been the subject of various memoirs and discussions. M. Chibret, of Clermont-Ferrand, at a meeting of the Société Française d'Ophtalmologie (reported in the *Annales d'Oculistique*, t. cxv., June, 1896, p. 452), maintained the following proposition—that the granule is produced by a microbe of a special kind that has not hitherto been isolated. The other forms of trachoma, as the hard, warty, superficial granulation, the soft granulation buried in the conjunctival tissue, and the intermediate forms between these two, represent modes of reaction of the conjunctiva towards trachomatous infection; whilst spring catarrh and folliculitis may be provoked by other causes of conjunctival irritation than the trachomatous microbe. M. Chibret lays great stress upon race; he finds that absolute immunity exists amongst the savages in Canada, such as the Iroquois, the Hurons, Mic Macs, Chippeways and others. Certain negroes, especially those of America, enjoy, according to Swan Burnett, a relative immunity in regard to trachoma, such negroes coming from Western Africa. But according to Van Millingen, the negroes of East Africa, who have a considerable admixture of Semitic blood, do not enjoy the same immunity. Amongst the white races, M. Chibret considers that the true Celt enjoys a relative immunity—that is, that he does not take it from another Celt. The yellow race is very liable to the disease. Santos Fernandez found sixteen trachomatous patients amongst negroes, sixty-seven amongst whites, and 114 amongst the yellow race. Trachoma is rare amongst the Swiss and inhabitants of

mountainous regions. It is probable that M. Chibret's propositions are in the main true, though in the discussion that followed the reading of his paper M. Pechdo observed that he was a Celt, and had been infected by another Celt; whilst M. Gouvea had observed an epidemic in a mixed population of white and black races which spared neither the one nor the other. M. Galezowski thought that hygiene and habitation were points of more importance than race. Malgat, of Nice, and Wordemann, of Milwaukee (*Annales d'Oc.*, 1896, p. 344), have noticed several instances of monocular trachoma.

6. Treatment of subconjunctival hæmorrhages with eserin.

Hubert Burnham, of Toronto (*Annales d'Oculistique*, t. cxv., 1896, p. 346), has applied eserin, in doses of one-quarter of a grain to one ounce of water, with permanent benefit in cases of recurrent bloodshot eyes. Many methods of dealing with pterygium have been suggested, such as reflecting the apex, reflecting it and burying it in a slit made in the conjunctiva, ligaturing the base; but A. Trousseau proposes (*Annales d'Oculistique*, 59^e année, t. cxv., 6^{me} livraison, June, 1896, p. 418) to deal with this affection by detaching the apex and snipping it off, and then applying to the cut surface a line traced with the galvano-cautery, which leaves a cicatrix that arrests the further progress of the disease. The line should be curved with the convexity outwards. He further adopts the proceeding recommended by Deschamps (*Annales d'Oculistique*, t. cxiv., p. 53, and *Bull. et Mémoires de la Société Française d'Ophtal.*, 1895, p. 510) of curettage, or scraping of the surface of the cornea, from which the head of the pterygium has been reflected. Wecker, indeed (*Recueil d'Ophtalmologie*, January, 1896, p. 38), trusts to this proceeding alone without the separation and reflection of the apex, performing it very carefully and completely, and applying anti-septic treatment for some time afterwards. He states that the corneal tissue recovers complete transparency. The same plan has been adopted with great success in his clinique, in cases of what is ordinarily known as *kératite en bandelette*; and in the discussion that followed the reading of his paper before the French Society of Ophthalmology, Jocqs endorsed Wecker's statements in regard to the advantage of this mode of treatment in *kératite en bandelette*, and had observed the opacity of the cornea to be very slight. A. Darier, on the other hand, uses binocide of mercury ointment in the slighter cases, and recommends subconjunctival injection of perchloride of mercury in the more severe, especially if accompanied by hypopyon.

A sound knowledge of the causes of disease is an important antecedent of appropriate and successful treatment, and as several forms of corneal disease prove, even in the ablest hands, refractory to the action of remedies, **Uthoff** and **Axenfeld** deserve credit for having undertaken a careful inquiry into the pathology and bacteriology of purulent keratitis. They find (*Graefé's Archiv*, 1896) that the most common form of serpiginous infectious ulcer is due to the presence of pure pneumococcus, which is rarely associated with other micro-organisms. In other forms of keratitis accompanied with hypopyon they twice observed staphylococcus, and on three occasions streptococcus as well as other rarer forms of microbes. The keratomalacia of badly nourished infants yielded on two occasions pure cultures of streptococci. The various forms of superficial, dendritic, phlyctenular and parenchymatous keratitis, and the ulcers occurring in the course of spring catarrh, did not in any instance exhibit the presence of pneumococcus.

Researches undertaken in a similar spirit have been made by **O. V. Sicherer**, of Munich, who, having perfected the methods of inoculation, was successful, in opposition to the negative results obtained by Hess and Bach, in producing corneal ulcers in rabbits by inoculating them with staphylococcus (*La Clinique Ophthal.*, August, 1896, p. 112). He found on experimenting with various fluids that, twenty-four hours after subcutaneous injections of 2 per cent. solution of common salt, which proved to be the most effective remedy, a marked diminution in the extent of the necrotic zone at the margin of the ulcer was observable, and this improvement was associated with an abundant infiltration of leucocytes, especially in the immediate vicinity of the spot where the injection was made. In a critique on this paper (*ibid.*, p. 112) **A. Darier**, whilst admitting the value of the observation demonstrating the active influence of leucocytosis in the cure of corneal ulcers, greatly prefers the solutions of the salts of mercury to solutions of common salt, and states that the solution which he has satisfied himself exerts the most favourable influence over such ulcers and over cases of macular chorio-retinitis is composed of the following ingredients: Mercury cyanide, $1\frac{1}{2}$ grain; sodium chloride, 150 grains; and distilled water, 18 ozs.

7. Treatment of choroiditis by means of iodine.

M. Vignes (*Annals d'Oculistique*, June, 1896, t. cxv., p. 449) states that he has continued to obtain satisfactory results in cases of chronic choroiditis from the subcutaneous injections of iodine. Since the publication of his previous article on this subject

200 cases have been under his care, and, in some instances, the effects have been extremely satisfactory. The forms of disease that have responded best to this mode of treatment have been the plastic and even fibrinous affections of the uveal tract, whether the sclerotic be affected or no; hence the forms of disseminated choroiditis, of fibrinous irido-choroiditis, and of irido-sclero-choroiditis are especially amenable to this form of medication. In the two latter types of disease it is well, he has found, to use the ordinary means of cure in addition, and particularly the actual cautery. Injections of iodine are inferior to mercurial treatment in the specific forms of choroiditis, but they are particularly valuable in the rheumatismal forms, and the exsudative period is the period when the good effects of the remedy may be especially seen, and improvement is shown by the disappearance of the muscæ in the vitreous and clearer vision. It is not followed by visual improvement in cases of myopic staphyloma. The daily dose is about $\frac{1}{10}$ gr. dissolved in a little weak solution of potassium iodide.

8. Operative treatment of myopia.

It is well known that the subjects of high degrees of myopia are liable to many troubles besides the necessity of wearing strongly concave glasses as a remedy for their defect. Not only is it difficult and fatiguing for them to wear the appropriate correcting glasses, but they are liable to hæmorrhages in or on the retina, and to detachment of the retina, and their condition is likely to increase. The use of concave glasses sufficiently strong to give tolerably distinct images of distant objects cannot in many cases be borne for more than a few minutes at a time. Hence various suggestions have been made with a view of alleviating their trouble, and amongst others the removal of the lens, on which subject a discussion was opened by J. B. Lawford, in the Ophthalmological Section of the meeting of the British Medical Association held at Carlisle in July of 1896 (*Lancet*, August 8, 1896). The degree of myopia which, in his opinion, justified operative interference was 12 D., but v. Hippel had operated, he remarked, on a case of as high a degree as 50 D. with success, so that there appeared no upper limit to the amount of myopia present rendering the eyes unsuited for the removal of the lens. If determined upon, the removal of the lens should be effected by discission, and no iridectomy should be performed. The operations performed by Lawford, Cross, Batten and others seem to have been attended with satisfactory results. In those recorded by Lawford, out of sixty-eight cases vision in sixty-four underwent improvement. A difficult question arises

in regard to the advisability of operating in cases of advancing myopia in children, since on the one hand the progress of the disease may be arrested naturally, and on the other, if the operation be postponed, pathological changes of a serious nature may become established. **Batten** considered that in his cases the removal of the lens was often distinctly beneficial to the condition of the eye, the sclerotic assuming a whiter and firmer aspect, the choroid appearing less thin and the retinal vessels more tortuous. **Percival** showed that in aphakia the posterior pole of the eye should be situated 31.1 mm. behind the cornea in order that it should be emmetropic. Each mm. of defect or excess of this length would require a correcting glass of ± 0.71 D. placed in front of the eye. In the normal condition each mm. of excess or defect of 22.8 mm. required a correcting glass of ± 3 D. The result of the operation would consequently be a diminution of the refraction by about 25 diopters. A discussion on the same subject was led by **M. Pflüger**, of Berne, in the Congress of the Société Française d'Ophtalmologie, May, 1896 (reported in *La Clinique Ophtal.*, 1896, p. 64). Pflüger adduced eighty cases in which the curvature of the cornea had been determined as carefully as possible before and after the operation of extraction of the lens, and gave the results which coincided satisfactorily with theory. **M. Abadie** thought the antiseptic measures of the present day rendered the operation of extraction justifiable in myopia, but was of opinion that the point on which stress should be laid was not so much the degree of myopia as the circumstance of its progressive character. The opinions of other speakers seemed to be in favour of the operation; they believed that vision was improved by it to a considerable extent, that the danger was small, but that the removal of the lens, which should be effected by discission, did not necessarily prevent the progress of the myopia, whilst it was occasionally followed by detachment of the retina.

Julius Ascher, in an article on this subject (*Deutsch. Beit. zur Augenheilkunde*, Heft 23, p. 21), has collected reports from various quarters showing that up to the close of last year (1895) about 400 cases have been operated on. In some of the cases the myopia existing at the time of the operation was arrested in the eye operated on, whilst it continued to advance in the opposite eye upon which no operation had been performed.

9. Removal of the lens in cases of progressive high myopia and in cases of detachment of the retina.

M. Vacher, of Orleans (*Annales d'Oculistique*, t. cxvi., p. 5, 1896), who has practised extraction of the lens under these

circumstances, points out that it was suggested by the Abbé Desmonceaux as long ago as 1776, and that about 120 cases have been recorded by different observers, many having had only one case, whilst he is himself able to add fourteen, which, with twenty-three he has previously reported, make thirty-seven on which he has operated. The conclusions at which he has arrived from a review of all his cases are that the extraction of the transparent lens is a serious operation which should be practised only with reluctance, and with the greatest precaution in regard to asepsis. As myopia progresses rapidly between the ages of twelve and sixteen years, the age of twelve should be selected if there be a large staphyloma, and if the number of diopters of myopia exceed the number of years the patient has lived. One eye alone should be operated on, and this should invariably be the eye with the worst vision. The other eye should not be operated upon, unless at the express request of the patient, or when the myopia is making rapid progress. After the age of thirty years, inasmuch as those who have a myopia exceeding 15 diopters are very liable to detachment of the retina, the operation should be performed, provided their visual acuity is sufficiently good.

In the discussion (*Annales d'Oculistique*, t. cxv., p. 445) which followed the reading of this paper, **M. Abadie** stated that he reserved the operation for cases of myopia showing disorganisation at the fundus or macular choroiditis, and carefully avoided it in cases where there was good vision, however high the myopia might be; and **M. Parinaud** cited a case showing that too much reliance should not be placed on the effects of the operation in preventing extension of the myopia, for he had had under his care a patient operated on in childhood by de Wecker for congenital cataract. At first this patient required convex glasses, but by degrees myopia had become established and concave glasses were required, and finally detachment of the retina occurred.

M. le Dubarry (*Normandie Méd.*, No. 21, 1895) reports two cases of high progressive myopia in which he practised discission and removal of the lens with excellent results; for whilst in one the degree of myopia before the removal of the lens required a -24 D. lens, and then only amounted to $\frac{1}{3}$, after this operation his vision had improved to $\frac{1}{3}$ with a -2 D., and with a $+3$ D. the patient could read No. 3 of Wecker's test types. In the other case the correcting lenses were -22 D. for the right eye and -25 D. for the left. After the removal of the cataract, the vision was $\frac{1}{2}$ with a -1.5 D., and with a $+4$ D. he could read No. 2 of Wecker.

10. Treatment of detached retina.

The principal methods adopted for this condition are the application of Heurteloup's cupping glasses, the employment of galvano-caustic needles, the subconjunctival injection of solutions containing 25 to 30 per cent. of common salt, or their injection beneath the capsule of Tenon, says **M. Dor** (in "Report of the Ophthalmological Congress at Paris" in *Annales d'Oculistique*, t. cxv., p. 458); and, in addition, the steady persistence of rest in the recumbent posture, which he recommends to be adopted; for he has found in fifteen cases that the retina became re-adherent in ten; in nine of these the good results were permanent, whilst in one case a relapse occurred after seven months. There were five unsuccessful cases, but in two of them the patient would not persevere in this plan of treatment. In a discussion which followed the reading of this paper, **M. Vacher** stated that he was accustomed to exhaust the fluid collected beneath the retina with a Pravaz syringe. **M. Terson** preferred electrolysis with a fine needle and a current of 5 milliampères, followed by a long period of dorsal decubitus, and cited a case that had been under his care in which a young man who was brought to him in a condition of complete blindness, was now as the result of this treatment able to read No. 1 of Wecker's tests. Finally, **M. Chibret** stated that he had tried the novel plan of introducing into the vitreous a certain quantity of the perfectly fresh vitreous humour of a rabbit. He did not say what success in regard to vision followed this proceeding, but at all events it caused no serious reaction.

11. Glaucoma.

Excellent authorities seem still to be at issue in regard to the propriety of iridectomy in acute glaucoma. **St. John Roosa** ("Clin. Man. of Dis. of the Eye," p. 367), one of the most recent writers on the subject, lays down very dogmatically that in acute glaucoma, or in subacute, iridectomy should be performed without an hour's delay. On the other hand, **Prof. Wicherkiewicz**, of Cracow (*Klin. Monat. für Augen.*, 1896, p. 167), observes that at the present moment we are fortunately in the possession of means for effecting diminution of the tension of the eye which render it advisable to wait, even where the disease is in the acute stage, before undertaking the operation. The careful surgeon will probably take into consideration the violence of the symptoms, the stage of the attack, and the condition of the patient; operating if the pain be great, the failure of the vision almost or quite complete, and the patient robust, and delaying to operate in the less violent attacks and in delicate persons.

The propriety of treating chronic glaucoma by means of

iridectomy is still *sub judice*, and beneficial and injurious results are cited on both sides. On the one hand **Mr. Nettleship**—and many agree with him—considers that the operation rarely does harm, and is sometimes followed either by great improvement in vision, or at least, in other cases, by arrest of the progress of the symptoms which are tending towards complete blindness. On the other hand, **M. Trousseau** (*Annales d'Oculistique*, t. cxv., June, 1896) declares that from his own observations and from conversations he has had with many op' thalmologists the performance of iridectomy is not only useless but harmful. In a series of cases of which he has preserved careful notes he finds that in ten the visual power was at once lowered in one instance more than half, and in another case it was completely lost owing to the occurrence of intraocular hæmorrhage. In still another instance cataract supervened. The extension of the field of vision was small, not exceeding 15° in any case, and being only 5° or 6° in two cases, whilst no change was observed in eight cases. He has thus been led to oppose operative procedures in cases of chronic glaucoma without material increase of tension. He prefers to treat such cases by means of drugs, and states that he has notes of eight cases in which a cure was effected without the intervention of surgical treatment. The remedies he has used are subcutaneous injections of pilocarpin and of eserine with the administration of iodine, potassium bromide, and the salts of quinine. He has never observed the occurrence of sudden and severe exacerbations of the symptoms, whilst a stationary condition is frequent, lasting from three months to a year.

The period after syphilitic infection at which lesions of the optic nerve become noticeable has been made the subject of special inquiry by **Janus Kiewicz** (*Centralb. für praktische Augenh.*, July, 1895), who divides such affections into non-inflammatory lesions or processes of degeneration, which constitute 71·3 per cent., and inflammatory lesions or forms of neuritis, which constitute 28·7 per cent. Of the non-inflammatory lesions two groups may be distinguished—essential atrophy, 30 per cent., and tabetic atrophy, 41·3 per cent. Essential atrophy appears, as a rule, from five to ten years after infection. The author has observed it once after the lapse of six months, five times between one and three years, three times between three and five years, fifteen times between five and ten years, nine times between ten and fifteen years, eight times between fifteen and twenty years, and four times between twenty and thirty years. Blindness followed in ten cases once in the course of six months, and once at the close of five years. One woman was affected for every three men.

Tabetic atrophy appeared most frequently from five to ten years after the attack of syphilis. It is five times more frequent in men than in women. Acute specific neuritis occurs at a much earlier date. In one case it was apparent two months and a half after infection, but it may also occur at a late period, in one case as long as twenty-eight years after infection. In eleven cases out of twenty-six great improvement occurred after mercurial inunctions, especially in precocious cases. Atrophy resulted in four cases. Atrophy caused by neuritis appeared in from two to twenty years after infection, and the proportion of women to men was as two to three. No improvement resulted from treatment. The proportion of acute specific neuritis was 17·3 per cent., and of atrophy from neuritis 11·3 per cent. Neuritis, as a rule, appeared from one to five years after infection, and atrophy in from five to twenty years.

The relation between nasal affections and reflex ocular disturbances has been the subject of an interesting paper by **M. Georges Laurens** (*Ann. d'Oculistique*, t. cxv., p. 241). The first suggestion that reflex ocular troubles might have their point of departure in the nasal mucous membrane was made some years ago by **Hack** (*Wien. med. Woch.*, September, 1885), who pointed out that cough, neuralgia, migraine, and other affections were not infrequently connected with tumefaction and pathological states of the pituitary mucous membrane, and were curable by remedies directed to the restoration of the pituitary membrane to health, whilst they resisted other methods of treatment. Laurens observes that since Hack's paper was published cephalalgia, vertigo, nightmare, epilepsy, and spasmodic cough have been added to the above list, and that consequently it is not surprising that symptoms of eye trouble present themselves which may be referred to disease of the mucous membrane, especially when the close proximity of the eye, and the ultimate relations of the vessels and nerves with the continuity of the lining of the nasal duct and the conjunctiva are considered. The chief morbid conditions that have been observed by the many authors who have reported on this subject are acute coryza, polypi, ozæna, ulcers of the nasal fossæ, inflammation of the lining membrane of the sinuses, but especially chronic hypertrophic rhinitis. The reflex conditions that may be excited have reference to the sensibility of the eye, to the character of the secretions, to motility, and to trophic and vaso-motor disturbances. The particular affections that have been observed are heat, pricking, and pain, sometimes as acute as if a foreign body were in the eye, redness of the conjunctiva, photophobia, amblyopia, and amaurosis

The reflex irritation of the branches of the fifth nerve causes in some instances troublesome lachrymation, as may be concluded from the fact that simple cauterisation of the inferior turbinals effects a permanent cure. The reflex troubles of motility consist of blepharospasm, strabismus, mydriasis, and asthenopia; the trophic disturbances consist in congestion of the conjunctiva, iritis and glaucoma, whilst exophthalmic goitre may in some instances be regarded as a condition associated with disease of the nasal mucous membrane. Finally, contraction of the visual field has been observed by several practitioners. The affection of the eye is always, in accordance with the law of unilaterality, on the same side as the disease of the nose, though in accordance with the law of symmetry in some instances both eyes are affected, and in accordance with the law of intensity the eye primarily affected is always most severely attacked.

12. Tarsal marginoplasty.

The results of operations after some time has elapsed are rarely inquired into. In country districts the rarity with which operations on the eye are undertaken causes the surgeon to hesitate in communicating to the press the results of the one or two cases he has treated, but which he has been able to follow for months or years together; whilst with the operators in large hospitals in London or the provinces the press of work, the movement of the population, and the trouble required to obtain recent information, all contribute to prevent notes of ultimate results being gained. So it comes to pass that many methods of operation are devised and practised for the minor troubles of the eye and its appendages, whilst little is known of the final stages of such operations beyond the statements contained in the original paper. Much credit is therefore due to such researches as those of **MM. Truc and Veillard**, of Montpellier (Report of the Congress of the Société d'Ophtalmologie in the *Ann. d'Oculistique*, t. cxv., p. 455) on the final results of the operation of tarsal marginoplasty, undertaken for the relief of entropion and granular trichiasis of the upper lid. In this operation, which has been practised for about twenty years, but only by a few surgeons of repute, the ciliary margin of the lid is split along the whole or a part of its extent. Into the wound thus made a strip of the skin of the eyelid (the extremities still remaining attached) is intercalated. There can be no doubt that the immediate effects are satisfactory, but **MM. Truc and Veillard** have had the opportunity of examining twenty-one patients who had been the subjects of thirty-five operations of this kind from one to eight years after operation; and the results of their

inquiries have been most satisfactory. The cure has in every instance been perfect and persistent. The cilia have preserved their position remote from the border of the lid, and the margin of the lid has been reconstituted in healthy fashion. Moreover, the æsthetic results have in every instance proved satisfactory.

A case of epilepsy, or at least of epileptoid seizures, is reported by **Walter Johnson-Paterson**, of New Jersey (in the *Annales d'Oculistique*, t. cxv., p. 45), occurring in an astigmatic and strabismic patient, which was relieved by a - 1 D. cylinder, and was cured by a partial tenotomy.

That certain affections of the eye are due to hereditary syphilis has long been acknowledged, but **M. Galezowski** (*Recueil d'Ophthal.*, January, 1896, p. 1) has recently endeavoured to classify the diseases so produced, and to show that defects of vision due to the transmission of this disease may be observed, not only in the first, but in the second generation. The classification he proposes is into malformation of the protective membranes, paralyses or spasmodic affections of the motor nerves of the eye, arrests of development in the eye, and lastly, pathological changes in the tunics of this organ. The circumstances that have led him to admit the propagation of syphilitic disease to the second generation are, that lesions are not infrequently to be met with, which are indistinguishable from primary venereal lesions, in patients on whom no suspicion can rest of having themselves been the subject of infection. These lesions are various forms of choroiditis and keratitis, and the results of his experience were that such cases can be arrested in their progress by mercurial inunctions.

13. Duration of life after the appearance of retinitis albuminurica.

The occurrence of retinitis albuminurica is a sign of serious trophic disturbance, and it may sometimes be a matter of importance to be able to foretell the duration of life in persons in whom it is well marked.

A. Trousseau (*Annales d'Oculistique*, t. cxv., June, 1896, p. 424) has brought together some statistics on this point. **Riley** (Ophth. Soc., January 26, 1888) considers that the average duration of life is not more than eighteen months after the first appearance of retinal disease. **Snell** (Ophth. Soc., January 26, 1888) finds that of 103 patients with nephritic retinitis fifty-seven are dead at the close of the first year and twelve at the close of the second. **Baroness Possaner** (*Thèse de Zurich*, 1894) finds that in typical cases 59 per cent. of her own patients are dead at the close of the second year, whilst all the men who were under treatment at the hospital were dead, showing in a striking manner

the advantages possessed by those who could afford comforts and care. Of thirty-three women, only three survived at the end of the second year. Trousseau, however, has not observed this difference in his own practice. Of forty-five cases presenting well-marked symptoms of albuminuria, three were living at the end of four years, four after three years, ten after two years, twenty-eight, or more than half of the whole number under his care, were dead in less than two years. Eight had succumbed at the close of the first year, and three were dead in less than six months.

14. Amaurosis after hæmorrhage.

Amongst the various conditions that lead to or occasion blindness without apparent change of structure, loss of blood from hæmatemesis is commonly cited in books. Yet **Ed. Pergens**, of Brussels (*Annal. d'Oculistique*, 1896, t. cxv., p. 1), states that he has been able to find records of only about sixty cases from the time of Hippocrates to the present. The cause of the loss of vision in such cases, as well as in those caused by bloodletting, uterine troubles, and other similar exhausting conditions, like cholera, diarrhœa, prolonged lactation and persistent vomiting, is obscure, and various suggestions have been made. **Oehme** attributed it to dryness of the optic nerve; **Truka**, to infarction of the cerebral vessels causing compression of the optic nerve or retina. **Graefe** declared himself unable to assign any reason. **Samelsohn** thought that in most cases it was due to lymph accumulating in the cranial cavity during the hæmorrhage, which when the blood was restored was driven into the vaginal sheath of the optic nerve and thus paralysed the nerve by pressure, and then caused it to atrophy by interfibrillar proliferation. In other cases he thought it was due to hæmorrhage into the intervaginal space. **Hirschberg** made an autopsy and found no hæmorrhage, and concluded that there was an ascending atrophic process. **Rachlmann**, in a case of amaurosis from uterine hæmorrhage, found all the arteries contracted as the result of a fibrous endarteritis. Lamellæ of neoplastic fibrillar formation were present in the elastic coat, together with a great number of cells, and at two points the veins were completely obliterated and the arteries were constricted at several points within the disc, whilst there was peripapillary œdema. Pergens's analyses of the cases hitherto reported show that the visual field is generally reduced, the sense of light diminished, the papillæ white, bluish or greenish, the arteries contracted, the veins less affected, peripapillary œdema present. When the inflammation is of some standing, the vessels are seen in many instances as whitish striæ. The prognosis of these cases is very unsatisfactory, only about 8 per cent. recovering completely

and 19 per cent. partially. Therapeutical measures do not seem to exercise much influence on the affection, though iron, strychnia, and other tonics, leeches, paracentesis, and even iridectomy, have been tried without avail.

Quinine amaurosis, rarely seen in England or in temperate regions, but common in tropical climates by reason of the large doses administered in cases of marsh fevers, has been the subject of an article by **L. Demicheri** (*Annales d'Oculistique*, t. cxv., p. 32). This gentleman describes a case of very severe remittent fever with loss of consciousness for twenty-six hours, in which 93 grains of quinine were administered during the period of unconsciousness. The patient on the following day was perfectly blind, and remained so for a month. Five months afterwards, the patient's vision was still reduced to one-third of the normal in the right and to one-sixth in the left eye. Quinine amaurosis seems to be characterised by pallor of the discs from the first without peripapillary œdema. The quantity of quinine administered in different reported cases of quinine amaurosis has varied from 78 grains in thirty hours to 1,200 grains in three days. The auditory disturbance is always less than the visual. Central vision is the first to return. The prognosis is always more or less favourable, and in one case reported by **Gouvea** (*Rome Congress*), where the patient had ingested upwards of 300 grains with the intention of committing suicide, and was rendered both blind and deaf, and remained so for nearly eight months, the administration of cold baths, friction, residence on high ground, inhalations of amyl nitrite, and periorbital injections of strychnia, resulted in considerable restoration of vision, the patient being able to see eight-twelfths with the right and three-twelfths with the left eye. The treatment here adopted seems to be the most appropriate, and it should be remembered that the administration of quinine, even in very small quantities, is likely to cause return of the symptoms.

15. Treatment of strabismus.

The sure and successful treatment of squint must necessarily rest on correct views of its pathogeny. So long as this is doubtful and uncertain, the measures adopted must be empirical and liable to failure; but very different views are entertained of its causation, for whilst some are of opinion that it is due to the excess of the effort required to effect accommodation and convergence in the hypermetropic eye, leading to hypertrophy of the internal recti, others hold it to be a disturbance of the innervation proceeding from the convergence centre, and to be associated with weakening of the external recti. In some cases

recovery occurs naturally, but the majority of practitioners practise division of the internal or stronger rectus muscle, and this is effected either by division of the whole tendon, or, as recommended by **Stevens**, the division of a few of the tendinous fibres at one time. The other party, with **Landolt**, **Javal** and others, seek rather to establish harmony between the muscles by strengthening the weaker muscle, which is accomplished by advancing the tendons and thus giving it greater leverage, or by methodical exercise with the stereoscope. **Patrick Maxwell** (*Lancet*, August, 1896), at the meeting of the British Medical Association held at Carlisle, stated that out of 168 cases of convergent squint that had fallen under his notice, seventy-one were observed to squint before the age of

three. The average vision of the sound eye was $\frac{5.5}{6}$, whereas that

of the squinting eye was $\frac{6}{18}$. The degree of squint averaged about

30°. He exhibited an instrument he had devised which possessed a scale showing how much the tendon was raised from the globe, and how great an amount of shortening might be anticipated.

The use of electricity in the treatment of strabismus has once more been proposed by **Thomas S. Blair**, of Harrisburgh, Pennsylvania (*Annals of Ophth. and Otol.*, January, 1896, p. 30). He contends that the neurotic history of the case having been satisfactorily established, the treatment should be commenced at an early period, and although prisms may be employed as accessory treatment, and tenotomy may sometimes be required, yet appropriate treatment with electrical currents will often effect a cure without the employment of these means, which as a rule he has found of little value. The best results with the constant current have been obtained in his hands from the application of a large sponge electrode at the back of the neck and a rather small one at the motor point of the weakened muscle; the former is the positive, and the latter the negative pole. The current should be feeble at first, and at no time should it much exceed 5 milliamperes. In using the faradic current he commences each sitting with a light and rapidly interrupted current, gradually reducing the vibration to about sixty a minute. The current should be gradually strengthened to within reasonable limits, applied three times a week, and continued for some time. He uses atropin in addition locally, and sometimes large doses of gelsemium tincture internally. This drug relaxes all the muscles, and therefore the stronger antagonistic ones, and the current is thus made to act on the weaker.

16. Vision in the subjects of strabismus.

Points of considerable interest in regard to the treatment of those who are subject to squint is to determine whether the vision of disused eyes deteriorates, and whether, if this be the case, the adoption of appropriate remedial treatment by means of lenses or by operation will enable the defective vision of the disused eye to be recovered. These points were discussed in the fourteenth Annual Session of the French Ophthalmological Congress held in Paris in May, 1896. The discussion is reported by **M. Meyer** (in the *Annales d'Oculistique*, t. cxv., p. 431), who, after pointing out the nature and the means of demonstrating the existence of binocular vision, remarks that when from any cause binocular vision is lost, recovery cannot be anticipated when the failure of vision in the defective eye amounts to one-tenth or one-twelfth of normal vision. Where the amblyopia arises from hypermetropia appropriate glasses must be prescribed; but where from some defect in the muscles, electrical stimulation of the weakened muscles, or as a last resource, division of the stronger must be practised. **M. Masselon** stated that his observations upon a large number of the children attending the communal schools of Paris had convinced him that amblyopia is the consequence and not the cause of strabismus.

The employment of electricity as a curative agent in inflammatory affections of the eye has been strongly advocated by **A. v. Reuss** (*Deutsch. Beit. zur Augen.*, Heft 23, 1896). The suggestion is not altogether new. Electricity was used by **Arcoleo** (*Gaz. clin. di Palermo*, 1870) as long ago as 1867, who found it especially useful in cases of keratitis parenchymatosa; whilst in 1872 **Driver** (*Archiv für Augen. und Ohren.*, Bd. ii., Heft 2, 1872) recommended it as a means of relieving severe pain of herpes zoster ophthalmicus. In 1891 **Norsa** (*Archiv für Augen.*, Bd. xxiv., Heft 3, 1892) cured some obstinate cases of inflammation of the eye by using a bath of lithium salicylicum to the surface of the eye, and then transmitting a galvanic current through it. **V. Reuss** first tried the current in scleritis, but was very soon induced to employ it in keratitis. His mode of applying it is simple. Cocaine is applied to the eye; the lids are separated and an oval platinum plate of one-quarter or one-third of an inch in diameter is applied to the inflamed spot of the sclera or cornea. The circuit is then closed and the interrupted current passed of the strength of 1 to 1.5 m.a. for one minute or ninety seconds every other day. The sensitiveness of the patient determines whether the anode or the cathode is applied to the eye, the former being preferable. The other electrode is applied to the cheek, forehead, or hand. The

inflamed spot usually becomes redder after the application of the current, and occasionally a thin eschar forms ; but the current has then been too strong. He found that the pain in iritis and in irido-cyclitis was relieved by the use of the current. He thinks this mode of treatment will prove of service in all forms of inflammation of the eye.

DISEASES OF THE EAR.

BY GEORGE P. FIELD, M.R.C.S.,

Aural Surgeon, St. Mary's Hospital.

No absolutely new departures in the medical and surgical treatment of diseases of the ear will be found recorded in these pages, but a perusal of the literature of the subject shows that much activity has been displayed in perfecting modern operative methods and in simplifying the details of after-treatment. This especially applies to the radical treatment of the various forms of

1. Chronic suppurative disease of the middle ear.

Whereas ten years ago operations of this nature were of the rarest occurrence, attempts at radical cure now form part of the ordinary routine of practice, and it is not surprising that whilst distinct progress must be admitted, yet we are confronted with frequent failures and with occasional sequelæ of a regrettable character. There is evidence that failure is largely due to relying only on a single operative procedure under an anæsthetic, whereas two and even three operations are often found necessary by the most expert surgeons. In reference to the sequelæ, such as facial paralysis and total loss of hearing, these unfortunate incidents are not limited to the practice of those with slight experience as aural operators. Words of warning and suggestions of over-activity in this field of surgery are not wanting. Thus **Faulder White** (*Brit. Med. Journ.*, February 1, 1896) declares that he has had better success from persevering medication of middle-ear suppurations—even when accompanied by serious bone implication—through the meatus than by operations through the mastoid. He deprecates operating as a matter of routine, and fears the consequences of this practice in inexperienced hands. He bases his methods of treatment upon the ordinary laws of hygiene, and locally he uses a variety of antiseptic solutions for syringing out the tympanic cavity, including carbolic acid, alcohol, silver nitrate, acetate of lead, etc.; but he finds the most useful of all is silico-fluoride of potassium, sold by Branson, of Leeds, under the trade name of “salufer.” A case in his hands, which is stated to

have resembled those described by Luc and Dundas Grant at the London meeting of the British Medical Association in 1895, in which cerebellar abscess was found *post mortem*, presented alarming symptoms, which disappeared under "free leeching as advised by Field." White appears to have formed the impression that the cases of the cerebellar abscess narrated by Luc and Grant were the consequences of surgical interference, and he is of opinion that patients when operated upon are exposed to very real danger. This view has been controverted by Dundas Grant and H. E. Jones, of Liverpool. Grant points out that the cerebellar abscess was the consequence of the diseased mastoid antrum and attic not having been operated upon at an earlier stage of the disease, and did not result from the operation itself. He emphasises the importance of surgeons recording their failures as well as their successes. Hugh E. Jones writes that "the protest comes late," radical operations for the cure of otorrhœa having "advanced beyond routine operation and entered the stage of classification." He quotes the grouping of chronic suppurations formulated by himself in the *Liverpool Medico-Chir. Journ.*, vol. ii., 1894, which, being of considerable practical utility, may be here epitomised. Cases are arranged in five groups:—

Group I.—Those which, except when due to tubercle, are amenable to treatment by the older methods, including methodical curetting. They include (1) simple chronic inflammation of the cavity of the tympanum, with perforation in the tense portion of the membrane. (2) The same accompanied by polypi. (3) The same, with granulations and roughened bone.

Group II.—Attic suppuration—(1) with or without caries of the ossicles; (2) the same, or any of the three preceding, in which adhesions being present interfere with drainage or set up extreme deafness, tinnitus, or giddiness. The majority of cases in this group derive no permanent benefit from treatment until the ossicles are removed naturally or artificially, and in the meantime run great risks.

Group III.—All require radical treatment, and include—(1) chronic suppuration of the antrum; (2) cholesteatomata; (3) caries of antrum or tympanum, removable by operation on the mastoid without risk to important structures.

Group IV.—Caries or necrosis of the petrous bone, eradicable only with risk to life or important structures. (Tuberculous cases are usually met with in this group and the preceding.)

Group V.—Caries and hyperostosis or exostosis proceeding side by side. Jones employs the dental burr in dealing with the latter, as the bone is extremely hard and brittle, and liable to

sudden change from this to caries or cancellous texture, and he prefers the Stacke-Schwartz method for the "radical operation."

He concludes by raising the question as to the amount of mucous membrane that should be left in the cavity at the operation, and finds that it is better to leave a good deal, as although mucus continues to be secreted, and the middle ear is rarely quite dry, the cavity looks healthy and is easily kept clean. There is neither pus nor fœtor, and the hearing is relatively good. When the cavity is lined chiefly by skin, it is apt to become choked by epithelial scales and secretion, and to be attacked by eczema, besides which it is difficult to keep clean—unless a through communication with the ear exist. With certain exceptions, as cases of cholesteatoma and extensive caries, it is better to preserve as much as possible of the natural lining.

Hamon du Fougeray, who has for a considerable time advocated the treatment of acute and chronic middle-ear suppuration by plugging the meatus with medicated gauze, contributes a paper (*Revue Hebdomadaire de Lar.*, August 7, 1896) on the comparative value of various antiseptics. *Iodoform*, which he formerly employed extensively, he has now discarded on account of its irritating effects. He finds that a single dressing with this material is sometimes sufficient to set up an inflammatory condition of the meatus, whilst in other cases the suppuration in the tympanic mucosa is aggravated. He attributes this untoward effect to the disengagement of iodine vapour at the normal temperature of the meatus. *Sublimate* gauze has the disadvantage of being untrustworthy—in other words, it is often not pure, and even then the perchloride is apt to become reduced to a suboxide of mercury which is insoluble in the discharges. The *salicylate* is equally irritating, and often sets up erythema and swelling of the walls of the meatus. *Boracic* gauze is not quite free from the same objection, and its antiseptic properties are feeble. **Hamon du Fougeray** has consequently abandoned all these for the *naphtholated chinoline* gauze of Haug, which he confidently recommends to the profession. This preparation is obtained by acting on tartrate of chinolin with naphthol, and contains 5 per cent. of chinolin and 25 per cent. of naphthol; its antiseptic properties are very powerful, and it is soluble in purulent secretions. He had treated seventy-four cases with this gauze at the time of writing, and had never seen the slightest trace of irritation set up by it. On the contrary, eczematous conditions of the meatus had yielded to this treatment alone, and if suppurations do not disappear under it after a fair trial, it is to be inferred that there is some bone implication requiring radical surgical treatment for its

cure. When the suppuration is abundant the gauze must be renewed every twenty-four hours, but as the former diminishes, the intervals may be extended to three or four days ; the dressings must, however, be continued for some time after all discharge has ceased. This method is founded upon the views of Lermoyez and Helme, who maintain that suppurative otitis media becomes, in all cases, infected secondarily with pyogenic staphylococci by way of the meatus externus. Hamon du Fougeray plugs the meatus with antiseptic gauze in order to prevent access of aërial germs and auto-inoculation of the patient.

Knapp (*Arch. of Otol.*, vol. xxiv., pp. 3 and 4) discusses the question, "How far and how long in a given case is conservative treatment permissible and commendable, and when is operation justifiable and urgent?" In reply to the first portion of it, Knapp starts with the assumption that every marked case of acute otitis media extends more or less into the mastoid ; that when the main portion of the tympanic cavity is the chief seat of the inflammation, and the perforation is in the membrana tensa, opening of the mastoid need not be resorted to, as recovery nearly always takes place without it ; and that even when the mastoid symptoms are pronounced, there need be no hurry about operating. A certain degree of fever, especially in children, spontaneous pain, or pain on gentle or strong pressure, headache, puffiness of the integument of the mastoid, and even bulging of the upper and posterior end of the meatus, may disappear, and the patient recover completely, by the application of the Leiter coil, rest in bed, and gentle cleansing and syringing with weak antiseptic solutions. Paracentesis of the drum membrane, if the latter is bulging or the perforation is insufficient, is of course one of the earliest measures to be had recourse to. Supposing the inflammation to be confined principally to the attic, recovery is still possible without opening the mastoid, but one must not wait too long for it, as grave or fatal complications may set in at any time. A case of attic disease is cited which terminated favourably. A large part of the interior of the mastoid was believed to be involved, and communication between the antrum and attic twice interrupted ; but this was re-established by cold applications and paracentesis, so that the aditus and antrum proved sufficient eventually for the escape of the pus. Two cases are described in which the course followed by the disease was similar to that just mentioned, but the constitutional conditions were unfavourable, and operations became necessary ; the results were good. In a fourth case, operation was refused, and the patient died. Knapp draws the following conclusions from them :—

1. "There is in acute otitis media no symptom which by itself constitutes a sufficient indication for a mastoid operation, nor any one, perhaps excepting deep coma, which contra-indicates it. The most important symptoms are local pain, spontaneous and on pressure, headache, rise or fall of temperature, dizziness, nausea, vomiting, stupor, aphasia, hemianopsia, optic neuritis, paralysis, coma." In spite of Schwartz's opinion to the contrary, choked disc from otitic brain disease may disappear spontaneously or by operation, and there is a number of cases on record in which patients have recovered from a comatose condition after operation.

2. "The indications for operating are derived from the *ensemble* of the symptoms and the course of the disease.

3. "Cases of acute purulent mastoid disease should be watched for some time, even if the patient seem cured.

4. "Whatever the symptoms, the operation should, as a rule, be begun by opening the antrum, and afterwards guided by the conditions coming into view."

Bezold's experience is quoted, to the effect that about 9 per cent. of all cases of acute middle-ear suppuration are complicated with such a degree of mastoid inflammation as to make spontaneous recovery impossible.

From two other cases described in a subsequent paper (*op. cit.*, vol. xxv., No. 1), in one of which there was facial paralysis and a perforation into the digastric fossa, and in the other severe cerebral symptoms—both relieved by operation—Knapp draws the following additional rule:—"As long as there are grave and protracted symptoms of middle-ear disease we have to seek for their anatomical cause, in doing which exploratory openings into the cranial cavity are legitimate, because they are practically harmless, and sometimes save the patient's life."

In reference to this last statement, life is undoubtedly often saved by *necessary* intracranial explorations; but, though the skull is so often opened with apparent impunity, in view of the proximity of a very septic disease of the temporal bone, the expression "practically harmless" is at least incautious, and so careful a surgeon as Milligan has recently reported a fatal case of hernia cerebri after intracranial exploration. (*Archives of Otology*, January, 1896.)

2. The Stacke-Zaufal mastoid operation for the radical cure of obstinate otorrhœa.

Luc reported the result of his experience of fourteen cases in which he followed this method at the meeting of the French Society of Otology last year (*Journ. of Lar. and Otol.*, February,

1896). He adopted the principle of never opening the attic without exposing the antrum at the same time, and in order to ascertain whether the latter participates in the disease he injects fluid into the aditus with a Hartmann's cannula, and notes whether the expulsion of fresh pus follows this procedure. The presence of a fistula leading from the antrum to the outer surface of the mastoid, or to the outer wall of the meatus, is also made use of as a guide, and notice is taken of any external evidence of mastoiditis. Luc substitutes Zaufal's method of dealing with the membranous meatus for that advocated by Stacke.

As soon as the postero-superior portion of the circumference of the osseous meatus has been exposed by the elevator, he incises the postero-superior half of the membranous meatus at right angles to its length and at the level of its point of entrance into the bone, then by means of a bistoury and dissecting forceps he resects completely the postero-superior part of the periosteum of the osseous meatus. The next important point dealt with is the question whether the opening is to be maintained temporarily or permanently, or whether immediate closure is to be effected. In three cases the antrum, which was greatly enlarged by the destructive action of the disease, occupied almost the whole of the mastoid, so that after the opening had been made there was an enormous cavity behind the ear which never would have been filled up. This was therefore a case for Siebenmann's method for the maintenance of a permanent orifice and the hastening of the epidermisation of the walls of the cavity by the application of cutaneous flaps on the margins of the osseous opening. In two of these cases the superior and inferior flaps were made according to Kretchemann's method, but these were too small to enter for any great distance into the osseous orifice. In the third case a single triangular flap was cut with the base downwards, and of twice the length of these. In general, when there is a tendency to the formation of cholesteatomata, the opening in the meatus alone is insufficient, and a permanent retro-auricular opening is required. The drawback to this is the disfigurement, but it greatly obviates the chance of recurrence. If the mastoid cavity is small, and the meatus a wide one, drainage by the latter is justifiable at the proper time instead of by the wound, and this is the usual course of events. When the mastoid cavity is extremely small and the meatus unusually large, it would appear reasonable to close the retro-auricular wound at once, and to dress through the meatus exclusively from the commencement. The first dressings may be kept *in situ* for a week, provided the

temperature shows no disturbing elevation, but a daily change of dressings is preferable. When once, on removal of the gauze, the surface appears quite dry, it is sufficient to dust with iodoform, pure or mixed with boric acid, and introduce a fresh strip of gauze. If, on the other hand, there remains a little thick pus in one of the recesses of the wound, it is better to syringe out the cavity by means of tepid water simply boiled, or containing boric acid in solution. There appears to be no objection to syringing as long as the osseous breach extends thoroughly to the antrum. When the suppuration becomes very slight the dressings may be less frequent, and the iodoform may be replaced by boric acid or salol. As regards the duration of treatment, bearing all the circumstances in mind, especially the tendency to recurrence of cholesteatoma, healing may be brought about in from ten to sixteen weeks. A much shorter time will suffice if the retro-auricular wound is allowed to close immediately, and the auditory meatus is large. Luc frankly admits that he has not been able to obtain healing within from four to eight weeks, and he feels quite satisfied if the suppuration is brought to an end in nine weeks.

Bates has contributed a paper on "Stacke's operation," based on a personal experience of ten cases (*Amer. Med. Surg. Bull.*, January, 1896). Several points in connection with the operation as performed by Bates are worth noting. For some reason which is not quite clear, the head in the neighbourhood of the affected ear, though cleansed, was not shaved, nor the ear syringed in any case. Schwartze's modification of first opening the antrum before chiselling the posterior wall of the meatus was not followed; if the latter is removed first, as Stacke directs, "more room is obtained to chisel in the depths of the bone, since the space occupied by the meatus becomes available in manipulating the chisel; a smaller opening externally is necessary, and the lateral sinus is less likely to be encountered." The operation is not considered successful unless the *aditus ad antrum* is reached. When the antrum is small or absent, the facts are soon known with certainty if one follows Stacke's method of operating. The removal of the outer wall of the attic is advocated, but the instrument used for this rather ticklish bit of surgery is not mentioned; a chisel for this purpose is not devoid of danger. Proper care in using the curette in the tympanum is very rightly insisted on. After the external auditory canal, tympanum, attic, aditus and antrum are converted into one cavity, Bates does not attempt to "paper" the denuded bone by skin flaps, as carried out by Macewen, Stacke, and others, and the cavity is not even

packed with antiseptic gauze; a small piece of wool is merely inserted in the meatus. No drainage-tubes are used, the wound along the line of the posterior attachment of the auricle being closed by interrupted sutures, dusted with iodoform powder, and covered with a contractile collodion cotton dressing. A large bunch of cotton-wool over the ear retained by a bandage completes the dressing, this being removed the next day and not reapplied; but the collodion dressing and sutures need not be disturbed for a week or two, as primary union takes place almost invariably. The after-treatment consists in instillations of balsam of Peru several times daily to prevent infection. Syringing and swabbing out the meatus is held to increase the discharge and retard cicatrisation, thus the dressing and after-treatment are reduced almost to a minimum. Bates had one death amongst his ten cases and facial paralysis in three, from preventible causes, but all improved. Looked at from this point of view the results leave much to be desired, but the simplicity of the dressing and after-treatment is a step in the right direction.

3. Transplantation of Thiersch's skin flaps in Stacke's operation.

Politzer (*Journ. of Lar.*, March 18, 1896) demonstrated before the Austrian Otological Society the case of a woman aged forty-six, in whom he had adopted this method. The "radical operation" for cholesteatomata had been carried out; six days later Thiersch's transplantation was performed with flaps of skin taken from the left forearm. On the anterior and upper wall of the wound the grafts succeeded perfectly, but the new skin did not adhere to the posterior wall, and although sufficient epidermisation took place to prevent adhesions of the walls of the passage, it was necessary to carry out fresh grafts on the posterior wall. Politzer does not say if he means to repeat this troublesome operation in other cases. We doubt very much whether it will be frequently adopted in England. Sheild (*Lancet*, February 8, 1896) has, however, considered it necessary, in some cases, to transplant skin flaps into the enlarged meatus after Stacke's operation, but he obtains them from a region close at hand, namely, the mastoid process, and this method seems much more worthy of trial than that of taking flaps from the arm. Bronner (*Brit. Med. Journ.*, October 17, 1896) also advocates skin flaps taken from the mastoid region close by, especially where it is proposed to maintain a permanent fistula behind the auricle. It may be mentioned, however, that Scheibe, writing on aural cholesteatoma (*Archives of Otolgy*, vol. i., 1896), advocates Thiersch's grafts instead of the skin flap.

4. Bezold's mastoiditis.

Luc (*Arch. Internat. de Lar., d'Otol. et de Rhinol.*, January, 1896) records another instance of this rare disease occurring in his own practice, in a diabetic patient. The true nature of the case was not apparent in the first instance, the swelling in the neck being attributed to simple extension of the œdema. Yet, at the preliminary operation, when the antrum was opened, the cavity was noticed to reach almost to the tip of the mastoid, and pus seemed to continue flowing from the lower part of the antrum whilst the wound was being packed. Three days later, however, the swelling in the neck increased considerably and caused distinct prominence of the sterno-mastoid. Pressure applied upon this caused pus to flow freely from the lower portion of the antrum, and the true nature of the case was recognised. A perforation was discovered on the inner wall of the mastoid apophysis in the digastric groove, and through this the pus had passed under the sterno-mastoid and along the sheaths of the great vessels. Luc, therefore, immediately resected the whole of the projecting portion of the bone with the gouge and Major's cutting forceps. The whole pus cavity was drained by passing a tube from the upper wound down along the sheaths of the vessels to a counter-opening three and a half inches below the angle of the jaw. The patient died four days after the operation. Luc makes the following observations: The principal element in the causation of this complication is the pronounced development of the mastoid cells approaching the internal surface of the tip of the mastoid; hence it is never met with in children, but generally in persons over fifty years of age in whom rarefaction of the bone is present. The pus once having perforated into the digastric fossa may either pass backwards under the sterno-mastoid to the back of the neck, or burrow downwards and forwards in the sheath of the vessels, ultimately appearing as a lateral pharyngeal abscess. The disease is insidious and non-febrile, but not free from risk of intracranial suppuration and danger. There is slight pain and fulness behind the angle of the jaw, together with a firm non-fluctuating swelling beneath the upper portion of the sterno-mastoid, limited above by the base of the skull. This may be mistaken for swollen glands or œdema. The most diagnostic sign is the gushing out of pus from the bottom of the antrum, when exposed by operation, on pressure being applied over the swelling in the neck. Luc recommends the treatment indicated above. The sterno-mastoid must first be thoroughly detached from the tip of the mastoid, and the whole of this portion of bone that projects below the base of the skull resected. A counter-opening is

to be made at the most dependent part of the swelling from without.

In spite of Luc's expressed opinion that prognosis is grave in this class of case, we question whether this view will be borne out by others; our own experience is that, where once the case is clearly recognised and surgically treated, the subsequent course is almost invariably favourable. The fatal issue in Luc's patient must in a large measure be attributed to the diabetic condition. The early diagnosis of these cases is often obscured by the fact that the aural symptoms are frequently not prominent, that the swelling does not make its appearance till a comparatively late stage, and that the patient merely complains of pain, which may or may not be referred to the side of the neck; in fact, it is frequently located at the back of the head. Our own cases have invariably done well after exit has been given to the pus in the neck.

5. The treatment of polypi and granulations of the middle ear.

Pritchard (*Archiv. of Otol.*, January, 1896) recommends that for three or four days before operation the affected ear be thoroughly syringed out three times daily with 1 in 40 solution of warm carbolic acid. On the morning of the operation the auricle and cartilaginous meatus are thoroughly purified with a 1 in 20 solution of carbolic acid; the deeper meatus and middle ear are again syringed with the 1 in 40 solution, and this is followed by an instillation of the same strength, or of 1 in 20, if the ear will tolerate it, as it often does. In the case of children and susceptible patients, a rather weaker solution is used. The instillation is allowed to remain in the ear for ten minutes or a quarter of an hour, the head being inclined over to the opposite side; it is then allowed to run out; the cartilaginous meatus is lightly plugged, and the auricle is covered with double cyanide gauze wrung out in 1 in 20, and a bandage applied over the whole. Before commencing the operation, which is carried out strictly antiseptically, the ear is again syringed with 1 in 40, and after removal of the polypus, its base is well curetted, and any carious spots thoroughly scraped. The blood and *débris* are then syringed out with 1 in 40, and a plug of double cyanide gauze is lightly packed down on to the affected area, care being taken to dissolve out the irritating soluble cyanides from the gauze by first thoroughly wringing it out of a 1 in 40 solution of carbolic; and, finally, a dressing and bandage are applied to the auricle. The subsequent dressing depends on the progress of the case; as a rule this requires to be changed only every second or third day—

whether more frequently or not depends on the presence of pain, temperature, or discharge. Even where subsequent treatment is necessary, Pritchard finds that it is much shortened by this anti-septic method, which abolishes all risk of septic infection.

The extremely careful method here advocated is unfortunately too tedious for the hospital out-patient department, and it remains to be seen whether the resulting gain is at all commensurate with the time and trouble expended.

6. A successful and most interesting case of trephining for **temporo-sphenoidal abscess** due to suppurative middle-ear disease is reported from Sheffield by **Sinclair White** (*Lancet*, September 26, 1896). This surgeon was performing an antrectomy for the relief of a chronic otorrhœa of four months' duration when the antral roof was discovered to be eroded, so that a grooved probe passed easily through the tegmen into the temporo-sphenoidal lobe, and pus issued freely by its side. The squamous bone was thenceforth trephined, the dura mater reflected, and the underlying brain incised, exposing an abscess containing about two ounces of green, stinking pus. The cavity was scraped and drained, but there was during the following days no material improvement in the general and mental condition of the patient. Accordingly the trephine opening was extended farther back, and a second abscess in the same region of the hemisphere, but smaller than the first, was found, cleaned out, and filled with iodoform. The patient made a perfect recovery.

Milligan also reports a case (*ibid.*, March 28, 1896). The symptoms pointing to cerebral abscess, and following upon left-sided middle-ear disease of three months' standing, were as follow: Great mental dulness, frontal pain, motor and sensory aphasia, left-sided ptosis, and facial paralysis; there were also congestion and fluffiness of the left optic disc. The temporo-sphenoidal lobe was explored and pus evacuated, and the patient did well for several weeks, but ultimately succumbed to hernia cerebri and suppurative meningitis. No secondary implication of the mastoid or parietes of the middle ear was found at the autopsy, so that microbic infection was presumed to have travelled direct to the brain by the venous and lymphatic radicles in the immediate neighbourhood.

7. Local anæsthetics in ear disease.

Guaiacol has already been used as a local anæsthetic in tonsillitis and other conditions. **Laurens** (*Ann. des Mal. de l'Oreille*, January, 1896) recommends its use as a 10 per cent. solution for operations on the tympanic membrane on the ground that a more perfect anæsthesia can be obtained than by cocaine.

Three applications should be made at intervals of five minutes, and perfect anæsthesia is said to be obtained at the end of twenty minutes.

Pollak calls attention to the advantages of *carbolised gelatine* aural ovoids (*Journ. of Laryn. and Otology*, June, 1896). They contain 10 per cent. of carbolic acid, and are brought out as a handy substitute for Hewetson's well-known remedy of carbolic acid and glycerine (1 to 10). They have a marked sedative and abortive effect in external otitis and in the early stages of acute median otitis.

Eucaine has recently been extolled as a substitute for cocaine. The toxic effects of the latter are well known, though these are not nearly so marked when the alkaloid is applied to the tympanum as when sprayed into the nose and throat. Eucaine slows the action of the heart instead of quickening it, and does not tend to cause syncope; it is said that as much as 30 grain has been injected in dental practice without mishap. Anæsthesia is more extensive as regards time and locality; solutions prepared with sterilised water do not go turbid as in the case of cocaine; moreover, eucaine is 30 per cent. cheaper. It is not so soluble in water as cocaine; 1 in 10 is a saturated solution, but a stronger one is not needed; in fact, a 5 per cent. solution answers ordinary requirements. In aural practice, however, cocaine is often used as drops to empty the blood-vessels of the tympanic membrane when it is inflamed; it would appear that eucaine is apt to cause hyperæmia, and is not, therefore, a universal substitute for cocaine.

DISEASES OF THE NOSE AND THROAT.

BY STCLAIR THOMSON, M.D., M.R.C.P., F.R.C.S.

THE most striking and most promising development in this domain of practice, as in several others, is the application of the Röntgen rays both in diagnosis and in treatment. The most surprising novelty has been the claim put forward for diphtheria antitoxin as a cure for ozæna. A considerable amount of literature has been contributed to the study of empyema in the accessory cavities of the nose; further attention has been given to the pharyngeal and palatine tonsils as possible points of entry for micro-organisms; and malignant disease of the larynx is ceasing to be regarded as the hopeless condition it was formerly considered. During the year the direct examination of the larynx by Kirstein's method has been simplified, and has attracted a good deal of attention.

NEW INVENTIONS.

Much work has been done by **Macintyre** in connection with the Röntgen rays in rhino-laryngology (*Journ. of Laryn.*, July, 1896, and a series of papers in the *Lancet*, 1896), and he concludes that in this department of medicine, while the photograph may be interesting as a permanent record, it is the direct inspection by means of fluorescent screens that offers the most practical help in diagnosis and treatment. He suggests that by placing the Crookes tube in front of the trachea and introducing a small screen into the pharynx, we could note on the latter the condition of the larynx and its neighbourhood. If the screen is directed upwards and the focus lamp placed over the nose, we can detect changes in the nasal fossæ and sinuses. It was demonstrated by **Waggett** and **Rowland** at the Laryngological Society (*Proceed.*, vol. iii.) that the movements of a probe introduced into the larynx or œsophagus can easily be watched when the shadow of the entire neck is projected on a luminous screen. In this way foreign bodies can be at once detected and

their removal immediately controlled. So far this method has succeeded in showing the base of the tongue, hyoid bone, epiglottis, arytenoid cartilages, etc., and in demonstrating the presence of foreign bodies and malignant growths.

Although first published in April, 1895, it is only within the last year that Kirstein's method of **direct autoscopy** of the larynx and trachea has been generally studied. It is hardly necessary to refer to the first publications on the subject;* for

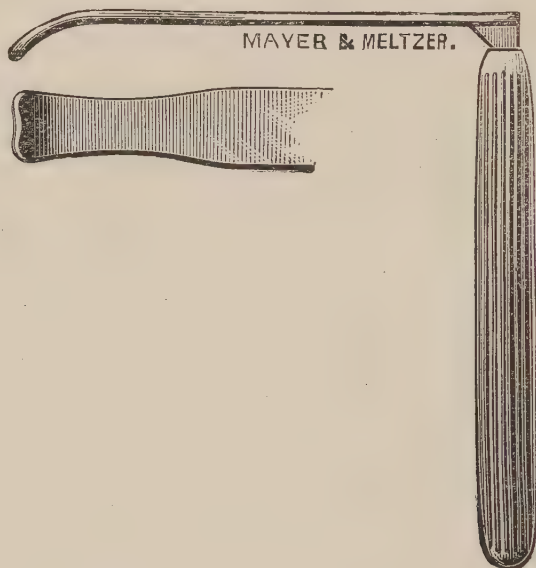


Fig. 1.—Spatula used in direct autoscopy of larynx.

in his most recent utterances † Kirstein insists on his method being much simpler than he had at first explained. Indeed, he now holds that it is quite incorrect to make use of his special autoscopic speculum except for operating, for examination under chloroform, and for demonstrative purposes. As the system is simply a development in the use of the lingual spatula, all that is required is a tongue depressor—a little longer than usual, and

* *Allg. med. Central Zeitung*, April 27, No. 34, 1895.

Berlin. klin. Woch., No. 22, 1895.

Archiv für Laryng., Vol. iii., Nos. 1 and 2.

Therapeutische Monatshefte, July, 1895.

Deut. med. Wochenschrift, No. 38, 1895.

† “Die Autoscopie des Kehlkopfes und der Luftrohre,” published by Oscar Coblentz, Berlin, 1895.

Annales des Maladies de l’Oreille, Mars, 1896.

“Die Freilegung der tiefen Halstheile mit dem Zungenspatel (Autoscopie der Luftwege)” *Münch. med. Woch.*, August 4, 1896.

Therapeutische Monatshefte, July, 1896.

Annales des Maladies de l’Oreille, Août, 1896.

notched at the end. The patient is seated with the body inclined forwards and the face directed upwards. Standing in front of him the physician introduces the spatula right to the base of the tongue, pressing that organ forwards and downwards towards the hyoid bone, and so bringing his eye and the axis of the trachea into one straight line. The epiglottis will not interfere with the view, as the traction of the spatula on the glosso-epiglottic ligament will tilt it forwards out of the way.



Fig. 2.—Diagram illustrating direct autoscopy of larynx.

The field can be illuminated with an ordinary frontal mirror, or by an electric lamp attached to the observer's forehead. (Figs. 1 and 2.)

Although not likely to supersede the laryngeal mirror for daily use, this method has undoubted advantages in certain circumstances, and just in those where the ordinary method of laryngoscopy has hitherto been unsatisfactory. For instance, when successful, this method gives a much more complete view of the posterior laryngeal wall. Even Killian, who suggested a particular attitude for obtaining a view of this region, has acknowledged the superiority of Kirstein's method (*Münch. med. Woch.*, August 4, 1896). And, as Wagner remarks (*Soc. Franç. d'Otologie*, May, 1896), "children have up to the present hardly

benefited by the progress of laryngology" owing to the difficulty of using the laryngeal mirror with them. They are found to tolerate the autoscope, even without anæsthesia, and under chloroform we can always obtain a view of the whole length of the larynx and trachea, so that "when children will not tolerate the mirror we can no longer dispense with Kirstein's method" (P. Bruns, *Berl. klin. Woch.*, No. 8, 1896).

GENERAL THERAPEUTICS.

The **inefficiency of gargles** for affections lying farther back than the anterior pillars of the fauces has been insisted on by **Lennox Browne** (*Journ. of Laryn.*, No. 3, 1896). Gargling can only increase inflammation and distress in acute disease (such as tonsillitis), is contra-indicated when the patient requires to be kept recumbent (as in diphtheria), and can be safely prescribed only when the ingredients are harmless. As substitutes he suggests mouth irrigations, sprays, lozenges, or medicated confections.

For the introduction of **sulphoricinate of phenol** we are indebted to **Ruault**; but little attention has been given to his book on "*Le Phénol Sulforiciné dans la Tuberculose Laryngée*," except for a warm commendation of it by Trifiletti at the Congress in Rome ("Year-Book," 1895). **Heryng** has employed the drug in a variety of affections, especially in laryngeal phthisis (*Therap. Monat.*, March, May, and July, 1896).

Cocaine continues to be more frequently employed in this department than, possibly, in any other, both for its anæsthetic properties, and its power of causing shrinkage of the tissues and thus facilitating examination. Still, the records of toxic accidents with it are sufficiently numerous to command attention to every means of avoiding them. **De Havilland Hall** uses a 20 per cent. solution of the hydrochlorate of cocaine, containing 10 per cent. of resorcin. The latter diminishes the toxic effects of cocaine, increases the anæsthetic action, and prevents the cocaine from crystallising out. The antiseptic properties of the resorcin in the solution are also of value. He entirely disapproves of the spray for applying cocaine to the nose, and in most of the cases in which unpleasant effects have followed the use of the drug he has found that a spray has been employed. He applies the solution on pledgets of cotton-wool, and does not use more of it than is absolutely necessary. In order to be prepared for cocaine poisoning, Hall always keeps ammonia and nitrite of amyl at hand. If after the application of a solution of cocaine the patient

becomes pale, giddy, or faint, he gives a drachm of the aromatic spirits of ammonia in two ounces of water, to be taken in sips. If this does not relieve the discomfort, he lets the patient lie down for a few minutes. He has never had occasion to employ the nitrite of amyl capsules, and since adopting the double solution of cocaine and resorcin, even the slight toxic symptoms have been of rare occurrence (*Brit. Med. Journ.*, February 8, 1896).

The recently introduced **eucaine** promises to be of service in rhino-laryngology, for it is equally anæsthetic and not so toxic as cocaine, while the solutions are very stable (Vinci). These advantages are to some extent outweighed by the fact that it produces a local hyperæmia, which lasts for half an hour after the anæsthesia passes away (*Rev. de Thérap.*, June 15, 1896).

The absence of this power of retracting the tissues is one of the objections to the use of **guaiacol**, a drug that has been tried by Laurens in a 5 per cent. solution. Guaiacol also presents the disadvantage of requiring repeated applications and a lapse of fifteen to twenty minutes before producing its effect (*Annal. des Mal. de l'Oreille*, No. 1, 1896). The researches of Geronzi show that its anæsthetic action is slight and that it is inferior to cocaine from many points of view (*Arch. Ital. Otol.*, Fasc. 3, 1896).

THE CONNECTION OF DISEASES OF THE NOSE AND THROAT WITH REMOTE SYMPTOMS.

The dependence of symptoms in other parts of the body on affections of this region has been illustrated by various contributions during the year. Amongst others we have the connection of sinus empyema with neuralgia (**Germann**, *Petersb. med. Woch.*, No. 5, 1895); of nasal polypi with tachycardia (**Spencer Watson**, *Brit. Med. Journ.*, November 2, 1895); of sinus empyema with affections of the eye (**Lunin**, *Petersb. med. Woch.*, No. 5, 1895; **Salva**, *Thèse de Paris*, 1895, and others) and with neuralgia or hysteria (**W. C. Wilkinson**, *Australas. Med. Gaz.*, January 20, 1896); and of inveterate melancholia with ethmoiditis (**Bosworth**, *N. Y. Med. Journ.*, October 12, 1895). Laurens points out that nearly all nasal affections may provoke, reflexly, ocular troubles (*Presse Méd.*, January 22, 1896). Luzzatti adds another instance of nervous excitation and cardiac and vaso-motor disturbance temporarily induced by surgical treatment in the nasal fossæ (*Gaz. degli Ospedali*, No. 2, 1896).

Adopting the theory of Hack and Schadewald, that **pertussis** is a reflex neurosis, and that the point of irritation is situated in the nose, where some still unknown microbe lodges primarily and principally, **Moizard** prescribes the following powder :—**R** Powdered benzoin ʒ ijss., salicylate of bismuth ʒ ijss., sulphate of quinine ʒ ss. After the child has well blown its nose this powder is insufflated down the nostrils five times a day, diminishing the frequency with the improvement in the whoop (*Journ. de Méd. et de Chir. Prat.*, August 10, 1896).

Clinical observation shows the frequent **association of diseases of the mouth and naso-pharynx with chronic inflammation of the gastric mucous membrane.** **Fenton B. Turck** has shown that many of the pathogenic micro-organisms found in chronic gastritis are, in fact, identical in form and reaction with those found in the mouth or naso-pharynx of the same patients. Moreover, by treating the upper air-passages so that the organisms in question disappeared from them, he found that without other treatment the microbes vanished from the stomach and the gastritis was cured (*N. Y. Med. Rec.*, September 28, 1895, and *N. Y. Med. Journ.*, November 23, 1895). The obverse of this is considered by **Moreau B. Brown**, who acknowledges that while we have at present no proof of direct causation of acute inflammatory processes in the throat being brought about by stomach disorders, still clinical observation is abundant in favour of such causation (*Journ. of Laryn.*, September, 1896).

The view is gaining ground that **rheumatic fever** arises from the absorption of microbes or their products into the system. As this must generally take place through the tonsils, **Willoughby Wade** urges the necessity of attending to the disinfection of the throat in rheumatism, however slightly it may be disordered, and however slight the rheumatic symptoms may be. He has also seen not a few cases with symptoms of **neurasthenia, anæmia, general debility**, general ill-health, often with slight recurrent febrile symptoms, disturbance of stomach, or liver, or kidneys, which have been most intractable to ordinary treatment, but which have readily responded when treatment has been supplemented by disinfection of the throat by means of gargles, sprays, or insufflations. As a gargle he recommends: **R** Mellis ʒ iv., lot. nigr. ʒ viiss. The sprays he has found most useful are: **R** Zinc. sulpho-carbol. gr. iv., aq. ad ʒ i. ; and **R** Acid. sulphuros ʒ i. to ʒ ii., aq. ad ʒ i. As an insufflation—**R** Salol, sodæ bicarb., āā gr. iii. to gr. v. If the patient uses the spray he should direct it through each nostril as well as through the mouth (*Brit. Med. Journ.*, April 4, 1896).

THE NOSE.

At the 1896 meeting of the Soc. de Laryn. de Paris (*Arch. Inter. de Laryn.*, No. 2, 1896) it was advanced that, with the exception of trauma, **necrosis of the turbinals** is so significant of syphilis, and that therefore iodide of potassium is so strongly indicated, that there is no necessity to ask for a specific history. It was recalled that **Fournier** teaches that when tertiary syphilis first appears in or near the face it is always a grave symptom, and may be the forerunner of deeper manifestations—especially in the brain. The incompleteness or absence of preceding anti-syphilitic treatment is an aggravating circumstance. **Tissier** insists (*Gaz. des Hôp.*, Nos. 20, 23, 1896) that in treatment one must *frapper vite et fort*. He gives up to 25 and 50 grains of iodide of potassium three times a day, together with mercurial inunctions. Local treatment he considers to be of secondary importance. For hereditary syphilitic coryza he gives 5 minims of Liqueur van Swieten* in milk three times a day, sometimes adding a drop of tinct. iodi with advantage. If gastro-intestinal troubles interfere with this, he dissolves 15 grains of sublimate in alcohol and adds this to the child's daily bath; if the skin is ulcerated, the dose must be reduced to 7, 3, or even 1 grain.

An investigation into the bacteriology of **ozæna** has satisfied **Belfanti** and **Della Vedova** that it is caused by an attenuated type of the diphtheria bacillus of Klebs-Loeffler (*Archiv. Ital. Otol.*, Fasc. 2, 1896). Founded on this they instituted a treatment with diphtheritic antitoxin, and claim a cure in half the cases in which it was used. **Gradenigo** (*ibid.*, and Fasc. 3) confirms the elective action of the serum on the diseased mucous membrane of the nose. Of twenty-four cases which, in his hands, had been submitted to the treatment, he thinks that two may be considered cured. One case required twenty-seven injections spread over 110 days, the other twenty-four injections in seventy-three days. In both the attenuated diphtheria bacillus disappeared from the secretion. It is needless to give further details as to treatment, for the question is still *sub judice*, and as any opinion on it would only be an *à priori* one, we had better reserve judgment until further evidence is before us.

The greater frequency with which we now meet with **suppuration in the accessory cavities** of the nose is attributed by **Linkenheld** (*Münch. med. Woch.*, No. 8, 1896) in the first place to the greater attention directed to the search

* One-part of perchloride of mercury in 900 of water and 100 of alcohol.

for the condition; in the second place, to the recent epidemics of influenza; and thirdly, to the over-zeal now displayed in preserving carious back teeth. As another factor, he mentions the abuse of the galvano-cautery, and thinks that most cases are preceded by a catarrhal condition of the mucous membrane. From a valuable series of *post-mortem* examinations the conclusion is arrived at by **E. Fraenkel** that maxillary sinus suppuration is more frequently caused by intranasal than by dental disease. He also believes that nasal polypi are oftener the cause than the result of empyema (*Virchow's Archiv*, Bd. cxliii., Heft. 1). The most important paper we have yet had on the pathology of this affection is that of **Dmochowski**, who expresses the opinion, based on 152 autopsies, that not many cases have a dental origin. He differs from Grünwald in concluding that ozæna has no connection with disease of the antrum (*Archiv für Laryn.*, Bd. iii., No. 3). Amongst possible causes of sinusitis we should bear chronic plumbism in mind (**H. L. Wagner**, *Trans. Amer. Laryn. Assn.*, 18th Congress, 1896); and in reference to symptomatology, every case of trigeminal neuralgia that does not yield to ordinary treatment should be carefully explored for evidence of sinus suppuration. This advice particularly applies before the inauguration of any surgical operation.

The whole question of operative treatment of suppuration in the accessory sinuses of the nose is considered very fully by **Ziem** (*Journ. of Laryn.*, Nos. 10, 11, and 12, 1895). With regard to the antrum of Highmore, by far the most frequently affected sinus, he disputes the possibility of treating it through the natural orifice in the nose, and holds that a counter-opening made in the alveolar border, in the socket of a removed tooth, is the only rational procedure in a large majority of cases. In certain instances it may be necessary to make an opening instead through the canine fossa. Weil supports what he terms the conservative method of treatment by regular syringing through the natural orifice of the cavity. It is only if this fails after months of trial that we should have recourse to more active measures. I have found that catheterisation of the natural orifice is by no means easy or painless, and that the majority of observers find themselves compelled to make a counter-opening (*Wien. klin. Woch.*, April 2, 1896).

With regard to the frontal sinus, **Luc** has independently elaborated the plan designed by Ogston in 1884. This consists in opening the sinus from the outside through a curved incision below the inner third of the eyebrow, curetting and cauterising

the walls with chloride of zinc (20 per cent.) and introducing a rubber drainage-tube into the communication, which is made as large as possible between the sinus and the nose. (Fig. 3.)* The two points to be noticed about this method are: (1) That the external wound is sutured at once, so that the drainage takes place entirely through the nose; and (2) that the tube is not disturbed until it is taken out definitively; this is done as soon as suppuration has ceased, generally at the end of nine days (*Arch. Int. de Lar.*, 1896, No. 3). There is practically no disfigurement left by this incision, as was seen in a cured case shown at the Laryngological Society by Lack (*Proc.*, 1896).

Schech (*Arch. f. Lar.*, Bd. iii., Heft. 1-2) also recommends the external opening, and is strongly opposed to any attempt at washing out the frontal sinus through its natural orifice, such a



Fig. 3.

procedure being highly dangerous in execution and useless in result. This warning receives the strongest possible confirmation from the record of a case of Mermod in which, with scrupulous precautions, he attempted to catheterise the sinus from the nose. The patient died from meningo-encephalitis, and at the autopsy it was found that the probe had passed into the anterior fossa of the skull, in front of the intact lamina cribrosa, and that there was no trace whatever of a frontal sinus, although in life the symptoms had been suggestive of accumulation in that cavity (*Ann. des Mal. de l'Oreille*, April, 1896).

Much attention is being given to **nasal catarrh**, as recurring attacks of it doubtless help to lay the foundation of nasal obstruction with all its consequent troubles. **Freudenthal**

* For the use of this cut we are indebted to M. Helme, Editor of the *Archives Inter. de Laryngologie*.

(*Journ. Amer. Med. Assn.*, November 9, 1895) ascribes its frequency to the overheated and dry air of our houses, and pleads for freer ventilation, less overheating and overclothing, more open-air life, and a greater disregard for the "bogey" of cold catching. **Bermann** advises that every slight cold in an infant should be treated by nasal applications of a 2 per cent. solution of nitrate of silver on an ordinary straight camel's-hair brush. The brush must not be overcharged with fluid lest some should drop into the larynx. The application should be repeated if the breathing does not become noiseless. For hypertrophic rhinitis he very rightly deprecates the over-use of the galvano-cautery, and suggests as a substitute the use of trichloroacetic acid (*Arch. Pediat.*, October, 1895). To the employment of nitrate of silver in children it is objected by **Hamon du Fougeray** that it is painful, and can be made only by the physician himself. He recommends painting the nose and pharynx with a 10 per cent. solution of menthol in olive oil (*Ann. des Mal. de l'Oreille*, December, 1895).

Carl Seiler (*N. Y. Med. Journ.*, July 18, 1896, and *Trans. Amer. Laryn. Assoc.*, 18th Congress, 1896) also agrees that children are predisposed to catarrh by overclothing, overfeeding and over-caretaking, and that in many cases the general practitioner is responsible for this. While agreeing that an alkaline nose wash will help to end a chronic coryza, I must strongly dissent from Seiler's suggestion that children should be taught systematically to use a nose wash as they do a tooth brush! There is no analogy between the two cavities, and the researches I made with Hewlett show that the nose is naturally an aseptic and self-cleansing cavity, while the mouth is the very reverse (*Medico-Chir. Trans.*, vol. lxxviii., 1895). In the *Practitioner* (December, 1895) I pointed out that for this reason strong antiseptic solutions are, as a rule, useless in the nose; they are also dangerous, because if solutions were used strong enough to have an antiseptic power, they would prove much too irritating to such a sensitive mucosa as the Schneiderian membrane.

Seiler (*Med. and Surg. Rep.*, May 23, 1896) says that the fluids used should have a specific gravity equal to that of the blood serum, thereby preventing too much osmosis or endosmosis in the nasal cavity. This is represented by 56 grs. of sodium chloride in a pint of water. **Murray McFarlane** suggests the following tablet, containing the soluble salts of the blood plasma, which, when added to two ounces of lukewarm water, will form a solution as nearly as possible comparable with serum. The

addition of a small amount of menthol has a soothing effect:—
 R Sod. chlorid., gr. $5\frac{1}{2}$; sod. sulph., gr. $1\frac{1}{2}$; sod. phos., gr. $\frac{1}{4}$;
 potass. chlorid., gr. $\frac{2}{5}$; potass. sulph., gr. $\frac{1}{4}$; potass. phosph., gr. $\frac{1}{3}$;
 menthol, gr. $\frac{1}{15}$ (*Canada Lancet*, October, 1895).

Chronic or **suppurative nasal catarrh in children** under twelve is, according to **Beckmann**, in 95 per cent. of the cases due to post-nasal growths (*Monat. f. Ohrenheilk.*, October, 1895). This is a sweeping unification of symptoms, but I think it a fairly safe one.

The subject of **post-nasal growths** was once more discussed at the International Congress of Otology in Florence in September, 1895. In a paper read by **Arslan Yervant** it was recommended that as soon as the presence of adenoids has been diagnosed they should be removed, even when the masses are small. He operates with Gottstein's curette, the patient being under bromide of ethyl. This was found by some speakers to give too short a period of anæsthesia; while many objected to the use of any anæsthetic whatever (*Rev. de Lar.*, No. 2, 1896). **Dalby** (*Lancet*, November 30, 1895) employs ether. He has the patient in a sitting posture astride a narrow couch; he uses the finger nail for children under five or six, and the artificial steel nail for older subjects. If the growths are firm he commences with the curette. When removed early in life he states that recurrence may take place even when the operation is carefully performed. On the other hand, **Broca** (*Gaz. des Hôp.*, No. 1, 1896) is of opinion that relapses are due to the growth of small fragments that have escaped removal, although recurrence might rarely be due to tuberculosis or syphilis. In case anyone is trying to find some treatment for post-nasal growths that will avoid instrumental operation, it may be interesting to note that the paintings with a strong solution of resorcin, advised by Maraye, have been shown to be quite useless (**Chaumier**, *Méd. Modern.*, December 25, 1895; also **Moure** and others).

FOREIGN BODIES IN THE UPPER AIR- AND FOOD-PASSAGES.

The occurrence of **foreign bodies** in the upper air- and food-passages is more frequent than many suppose. As the plan of treatment must vary considerably in every case, as no time is to be lost, and as ineffectual attempts at removal generally make matters worse, it is well worth while studying the record of various cases and the suggestions drawn from them. The

debate on the subject at the Laryngological Society (*Proc.*, February, April, 1896) should therefore be carefully read. Amongst the general points touched on were the deficient power of a patient to localise sensations, the persistence of sensations after the removal of the foreign body, and the desirability of any digital or instrumental exploration being preceded by a careful inspection. Before attempting any removal from the larynx or trachea we should be prepared for the possible necessity of a sudden tracheotomy. This operation is more likely to be called for in children, as endo-laryngeal treatment is interfered with by the fact that in childhood the action of cocaine is dangerous, its anæsthetic effect is slight, and it produces a very free secretion of mucus (*Arch. f. Laryn.*, Fasc. 2, 1896). Such cases offer a hopeful field for Kirstein's autoscope (page 406). When the foreign body has not been expelled even after a tracheotomy, the opening in the trachea should not be allowed to heal so long as there is any suspicion of the foreign body being still in the air passages (*Wade, Lancet*, December 14, 1895).

J. W. White narrates a case that illustrates the immense help in diagnosis and treatment to be obtained from the X rays. By the aid of a skiagraph a foreign body was easily detected in the œsophagus of a boy, just above the bifurcation of the trachea, where it had been impacted for twelve days. After failure by oesophageal instruments, it was removed by gastrotomy and extraction. In such a case the Röntgen rays offer immense help in avoiding instrumental exploration, in exactly locating the body, in selecting the form of treatment, and in making the diagnosis, when the history is wanting or uncertain. In the above instance it "substituted accuracy and promptness for otherwise unavoidable uncertainty and delay" (*Annal. of Surg.*, August, 1896).

TONSILS AND PHARYNX.

Cough is a reflex act with its seat in the larynx, but the point of departure of the reflex stimulus must frequently be sought at some distance from that organ. The occurrence of "**tonsil cough**" is explained by Furet as in part due to the complex innervation of the gland through the glosso-pharyngeal and pneumogastric. Not only simple hypertrophy of the tonsil, but foreign bodies or calculi embedded in it, lacunar tonsillitis, pharyngo-mycosis, and other conditions, may be the originating factors. The cough is violent, abrupt, and spasmodic; neighbouring reflexes may be stimulated,

especially that connected with lachrymation ; there is no expectoration. The treatment should be appropriate to the tonsillar condition (*Arch. Int. de Lar.*, No. 3, 1896).

In acute peritonsillar inflammation suppuration may be averted by the free application of a strong solution of hydrochlorate of cocaine (*R. Fox, Lancet*, February 8, 1896). Primary **tonsillitis** requires the same treatment as that occurring in the course of measles, scarlatina, and other non-diphtheritic fevers. The outlines of treatment are thus given by Gaston Lyon : All anginas are infectious. No special microbes are associated with them ; pyogenic microbes, streptococci, pneumococcus, bacterium coli, are those chiefly found ; but as all of them are habitual, and some (the streptococcus) constant, inhabitants of the mouth, their detection is no aid in diagnosis. Hence he isolates every case of sore throat, and institutes strict antiseptic treatment, even in cases which are apparently perfectly simple. In mild cases antipyrin or quinine is administered internally, but he obtains the best results from salol given in solution with mucilage, in doses of 15 grs., three to six times a day. Pain may be relieved by sucking ice, or by a spray of boric acid, grs. v. ; cocain. hydrochlor., gr. $\frac{1}{2}$; water, \mathfrak{z} j. Locally he has most faith in irrigating the throat every three hours with tepid lotions, and as their action is chiefly mechanical, the important point is to use at least two pints at a time, employed from an ordinary douche can or from a jug with a siphon tube. The following are suggested : (i) A 4 per cent. solution of boric acid ; (ii) Salol, grs. xxx. ; spirit. vini rect., \mathfrak{z} iss., to be added to 2 pints of warm water ; or (iii) Acid. carbolic. pur., \mathfrak{z} iss. ; menthol, grs. v. ; aq. Oij. Sublimate, from its toxic properties, should be employed with reserve, and prohibited in children. After a thorough washing of the mouth and fauces, one of the following paints may be employed twice a day :—(i) *R* Cocain. hydrochlor., grs. v. ; menthol, grs. xv. ; olive oil, \mathfrak{z} j ; (ii) *R* Acid. carbolic. pur. cryst., grs. viij. ; camphor, grs. viij. ; ol. gaultherii, \mathfrak{m} ij-v. ; glycerini, aquæ, āā \mathfrak{z} iss ; (iii) *R* Salol, grs. xlv. ; spirit. vini rect., q.s. ; glycerini, \mathfrak{z} ij ; (iv) *R* Guaiacol, glycerini, āā \mathfrak{z} j. They are readily applied on pledgets of cotton-wool held in pressure forceps. Or the following gargles may be used : *R* Acid. salicyl., grs. xxx.- \mathfrak{z} j ; boracis, grs. xxx.- \mathfrak{z} j ; mellis, \mathfrak{z} j ; aq. ad \mathfrak{z} x. ; *R* Phenosalyl, \mathfrak{m} xv. ; glycerini, \mathfrak{z} j ; spirit. menth. pip., \mathfrak{z} ii ; aq. ad \mathfrak{z} x. In the occasional severe cases with hyperpyrexia, cardiac trouble, etc., recourse might be had to antistreptococcic serum (*Rev. de Thérap. Méd.-Chir.*, May 15, 1896).

Do **varicose veins at the base of the tongue** frequently exist? Have they any connection with throat symptoms?

H. Tilley answers negatively, and is supported by a large consensus of opinion (*Lancet*, February 15, 1896). On the other hand, Lennox Browne found "lingual varix" in no fewer than 438 out of 1,547 patients, or nearly 28.3 per cent. (*Liverpool Med.-Chir. Journ.*, January, 1896).

Chronic catarrh of the pharynx and larynx is the most common—and formerly was the most intractable—of all the affections of this region. An article by G. Krebs sums up our present knowledge on this condition and shows how much progress has lately been made in it. Each case must be separately individualised. In the pharyngitis occurring in the chlorotic, the strumous, the plethoric, the diabetic, or the albuminuric, the general treatment is of prime importance, and local medication should be secondary and as moderate as possible. When the affection is local it is due in the majority of cases to the influence of tobacco, alcohol, or dust. The remaining and largest group is that caused by affections of the nose; it embraces the majority of cases of atrophic and muco-purulent pharyngitis. As regards local treatment, gargles are useless, and inhalations are harmful, but insufflations of powders, and well-applied paintings, merit more attention. The powders should be mild and non-caustic, such as boric acid, tannin, calomel, or zinc sozoiodol. Cauterisation of the posterior pharyngeal wall can do no good; it only substitutes a cicatricial tissue incapable of secretion for a mucous membrane which has more or less preserved its functions. Cauterisation of the posterior pillars may render some service if not done too actively. Hawking and gagging should be resisted; alkaline and alkaline chloride springs, or pastilles prepared from them—Ems, Vichy, Kissingen, Homburg—lessen the tough mucus and decrease irritation. The psychical element in these cases is most important. Finally, no active instrumental treatment should be undertaken until we have decided that the pharyngitis is not simply dependent on changes in the nose, or on a general condition (*Therap. Monatsh.*, June, 1896).

LARYNX.

Catarrhal laryngitis not dependent on, or not secondary to, some primary changes in the nose and pharynx is rarely seen (C. C. Rice, *Trans. Amer. Laryn. Assn.*, 18th Congress, 1896). When laryngeal changes are associated with faulty voice production, little dependence can be placed on local medication unless particular attention be given to proper methods of breathing and voice production. The nasal origin of many laryngeal affections

is once more insisted on by Joal (*Rev. Heb. de Laryn.*, No. 15, 1896).

In **acute simple laryngitis** and bronchitis—according to T. Hubbard—we are too much given to the use of stimulating expectorants, fortified by sedatives, to the unwise exclusion of a judicious use of relaxing expectorants. The best sedative to an inflamed larynx is a flow of non-irritating bronchial mucus, and to encourage this he recommends apomorphine, gr. $\frac{1}{30}$, in a freshly compounded acidulated mixture, every two to three hours. In twelve to thirty-six hours it rarely fails to cause a free sero-mucous flow. The best sedative is codeine sulphate, gr. $\frac{1}{5}$, p.r.n. (*N. Y. Med. Journ.*, July 18, 1896).

A study of laryngological literature shows that there is some tendency to treat such benign growths as **laryngeal papillomata** by laryngo-fissure, so as to be able to remove the growths directly and apply caustic to their attachments. In a debate at the Soc. Franç. d'Otol. (*Bulletins*, tome xii., 1896), although it was agreed that in children simple tracheotomy was often followed by disappearance of the growths, Moure and others held that, in view of their tendency to recur and their possible degeneration, it was wiser to avoid repeated intervention and at once do a radical operation by thyrotomy and curetting. Navratil reserves laryngo-fissure for adult cases where the endo-laryngeal method is followed by constant recurrence. In children he attempts removal *per vias naturales*, and performs tracheotomy when there is recurrence or threatening of dyspnœa (*Berlin. klin. Woch.*, No. 10, 1896). Hunter Mackenzie recalls a case of a four-year-old boy in whom thyrotomy was performed seventeen times in three years, and only after the last operation did the growths begin to vanish. He therefore condemns the operation and strongly commends tracheotomy (*Brit. Med. Journ.*, September 12, 1896), though Toti shows from examples that this is not always sufficient (*Riv. delle Mal. Gola*, No. 8, 1895). Massei sums up the whole matter excellently. He points out that the operation of laryngo-fissure is not free from danger, and that the result is not always a radical cure. His advice is: Choose the endo-laryngeal method when the age and docility of the patient permit, and when there is no fear of a dangerous spasm; otherwise have recourse to tracheotomy. This latter does not prohibit subsequent endo-laryngeal operation and, if still called for, laryngo-fissure. But this latter should be a last and not a first resource (*Arch. Ital. di Laring.*, April, 1896). It is in the treatment of papillomata in children that Kirstein's autoscope promises to be of considerable assistance (*vide* page 406).

That **tuberculous laryngitis** can be recovered from is an established fact, and, although too extravagant hopes have been raised by some of the results of local medication, the enthusiasm with which the subject has been investigated has left us with clearer indications as to the cases that are amenable to treatment. The spontaneous cure of laryngeal ulceration has been noticed even while the physical signs in the lungs remained the same or even increased (Clar, *Wien. klin. Woch.*, No. 4, 1896). Arrest is not necessarily cure; and *post-mortem* examinations not infrequently reveal that the tuberculous process has been increasing in the sub-glottic region, while, as seen in the mirror during life, the ulcerations on the vocal cords have been healing (Metzerott, *Amer. Med. Surg. Bull.*, February 22, 1896). Massei says that after twenty-six years' experience he has changed his opinion with regard to the treatment of this affection. Instead of being sceptical and timid he has become a believer in treatment, and bold in its application; at the same time he does not allow himself to mistake for cure what is only arrest. He gives the first place to tracheotomy, not only as a palliative, but as in many cases leading to unexpected good results. Surgical treatment by curettage he employs with reserve, being chiefly applicable when the laryngeal affection is very localised and apparently primary. Amongst other remedies he commends the use of iodoform, menthol, lactic acid, and, most warmly of all, phenol sulphuricinate (*vide p. 410*) (*Il Policlinico*, Anno II., Nos. 5 and 6). Botey employs a 10 per cent. solution of lactic acid in glycerine, with the addition of 5 per cent. of carbolic acid (*Arch. Latinos. de Rinol., etc.*, Nos. 59 and 60, 1895). Insufflations of iodol, repeated every three or four days, are warmly recommended by Hajek (*Therap. Woch.*, June 21, 1896). Complete recovery in cases where tuberculosis attacked the larynx first and the lungs later is recorded by D. Newman (*Glasg. Med. Journ.*, April, 1896). The principal local treatment was applying cocaine to the larynx and then freely spraying it with a concentrated solution of iodoform in equal parts of alcohol and ether, used at first twice daily and then three times a day.

"In general, the lives of patients suffering from **epithelioma of the larynx** have been shortened rather than lengthened by the efforts of surgeons." This statement, made by B. Delavan, is based on the fact that the average duration of life in such cases, without removal of the larynx, has been a year and a half. Recent results indicate that there is a more promising future for operation, provided the disease is removed early enough and only

suitable cases are operated on. The progress made in this department was shown by the debate at the British Medical Association meeting in 1895, and has been well summarised in a lecture by **Felix Semon** (*Clin. Journ.*, February 26, 1896). His own practice shows a result of 58 per cent. of lasting cures in cases treated by laryngo-fissure. This operation is only indicated in cases of intrinsic malignant disease. As this affects most frequently the vocal cords, hoarseness is the one invariable symptom. Hence every case of persistent hoarseness in a subject over forty years of age should be submitted to a skilled laryngoscopic examination. The cases most suitable for radical treatment by this method are those in which the disease appears in the form of a definite tumour on one vocal cord. If the disease is too advanced to allow of simple thyrotomy, either a part or half the larynx must be extirpated. When the case does not permit of radical operation—from the patient being seen too late, or from the disease starting in an inaccessible part—the chief palliative is an *early* tracheotomy.

Even total extirpation of the larynx for malignant disease is no longer the desperate measure it was formerly regarded, the risk of septic pneumonia being largely diminished by the adoption of the plan of cutting off all connection between the pharynx and trachea by dividing the latter and stitching its extremity to the skin (**Terrier**, *Arch. Int. de Laryn.*, No. 4, 1896). It is simpler than might be thought, respiration is not at any time interfered with, the wound in the pharynx is entirely sutured, and consequently healing is very rapid.

NEW PUBLICATIONS.

“Handbuch der Laryngologie und Rhinologie.” Edited by Paul Heymann, assisted by 45 writers. In 3 vols. München: J. F. Lehmann, 31 Landwehrstrasse. This important work promises to give a complete survey of the present condition of rhino-laryngology. Each subdivision of the subject is treated by a writer who has given special consideration to the matter in hand. The three volumes—on the Larynx, Pharynx, and Nose—are being published simultaneously, but in parts. The price of each part is 3 marks.

“Vorlesungen über die Krankheiten der Luftröhre.” By Professor Schrötter. Vienna: W. Braumüller. 1896.

“Thérapeutique des Maladies des Fosses Nasales, des Sinus de la Face, et du Pharynx Nasal.” In 2 vols. By M. Lermoyez. Paris: Octave Doin. 1896.

“Die Lehre von den Naseneiterungen.” By Grünwald. Second completely revised Edition. Pp. 295. München: J. F. Lehmann. 1896.

“Die Erkrankungen der Nase, des Rachens, und des Kehlkopfes.” A new edition of the well-known work of Prof. Carl Stoerk. Pp. 334, figs. 89. Wien: A. Holder. 1895.

“La Pratique des Maladies du Larynx, du Nez, et des Oreilles dans les Hôpitaux de Paris.” By Prof. P. Lefert. Paris: J. B. Baillière et Fils. 1896.

“Physiologie, Hygiène, et Thérapeutique de la Voix parlée et chantée.” By Garnault. Paris: A. Maloine, E. Flammarion. 1896.

“Die Krankheiten der Mundhöhle, des Rachens und der Nase, mit Einschluss der Rhinoskopie und Localtherapeutischen Technik.” Für Aerzte und Studirende. Mit 41 Abbildungen, 5 vollständig neu bearbeitete Auflage. Pp. 421. By Ph. Schech. Wien: Verlag von Franz Deuticke.

“Diseases of the Chest, Throat, etc.” By E. Fletcher Ingals. Third Edition. London: Henry Kimpton. Price 21s.

“Krankheiten und Behandlungslehre der Nasen,- Mund,- und Rachenhöhle, sowie des Kehlkopfes und der Luftröhre.” By Bresgen. Third revised and enlarged Edition. Wien: Urban und Schwarzenberg. 1896.

The “Revue de Laryngologie, etc.,” edited by Moure, instead of appearing every month, has become a weekly journal, under the title of “Revue Hebdomadaire de Laryngologie, etc.”

The “Archives Internationales de Laryngologie, etc.,” have been enlarged, and are now edited by F. Helme and Georges Gellé.

A new journal has been added to the list of those dealing with this speciality. The first number of “The Laryngoscope” appeared in July. It is a monthly journal, edited by F. M. Rumbold and M. A. Goldstein; the subscription is \$2 per annum, and the address—P. O. Box 787, St. Louis, U.S.A.

TROPICAL DISEASES.

By PATRICK MANSON, M.D., F.R.C.P.,

Physician to the Seamen's Hospital, Albert Dock Branch.

1. Malaria.

THERE has been no very notable addition to our knowledge of the ætiology or pathology of malarial disease during the past year. It is satisfactory, however, to note that British observers in India (Ross, McNaught, Maynard, Crombie, etc.) and in the Colonies (Daniels, Ozzard, etc.), as well as at home, are working at Laveran's parasite, and that in most particulars they confirm the more important statements of the earlier observers. A discussion at the Medico-Chirurgical Society of London (*Transactions*, 1896) on the malaria parasite was introduced by an excellent joint paper by Marshall and Thin. The writer (Goulstonian Lectures, *Brit. Med. Journ.*, March 14, 21, and 28, 1896) has advanced a theory as to the life-history of the plasmodium outside the human body which has received considerable support from observations by Ross and White in India, and which has also been discussed and, in a measure, countenanced by Bignami in Italy (*Il Policlinico*, vol. iii., M., 1896; translated in *Lancet*, November 14 and 21, 1896). A valuable addition to the histology of malarial disease by Barker is published in the *Johns Hopkins Hospital Reports*, vol. v.

2. Malarial skin eruptions.

Brocq (*Ann. de Dermat. et Syph.*, vii., No. 1, January, 1896) gives an interesting account of a peculiar circumscribed papulo-vesicular eruption on the nose which, after resisting all ordinary treatment, yielded to quinine. The spot was irregularly oval, about a centimetre in elevation by about a centimetre and a half in diameter. The base at times was red, swollen, and congested, and on the surface was a number of papulo-vesicles. There was a feeling of cutting and burning but no pruritus. These sensations were present on waking in the morning, but disappeared during the afternoon. It was ascertained that the eruption underwent certain changes. It increased a few days before menstruation; but, besides this, it was discovered that every morning about 4 or 5 o'clock the spot became inflamed and a

profuse watery discharge escaped from the vesicles on its surface, the discharge being accompanied by the cutting and tense sensation. These phenomena attained their height between 7 and 9 a.m., afterwards gradually lessening. By 2 p.m. the discharge and swelling had subsided, and by 6 p.m. the lesion was hardly visible. It was further found that the symptoms exhibited double tertian characters, being more urgent every alternate day. On inquiry it was also ascertained that some time previously the patient had exhibited certain malarial symptoms—such as neuralgia, catarrh, etc.—which had yielded to quinine, and it was also learned that she had lived in a malarial district and had had feverish attacks. The patient was given quinine. At the end of forty-eight hours the morning exacerbations of the rash ceased, and at the end of four days the spot was rapidly fading. The quinine was then suspended. Less than a month had elapsed when the spot reappeared as before. Quinine was again prescribed, and immediately improvement set in. On stopping the medicine, relapse again ensued in about a month's time, again to be arrested by quinine. Yet a fourth relapse ensued, when a prolonged course of quinine and arseniate of soda effected a permanent cure. It is to be regretted that there was no examination of the blood.

Brocq points out that the herpetic and urticarial eruptions which sometimes accompany paludism may be of two kinds. In some instances, he says, they are the result merely of the febrile condition, and are therefore in no sense specific; in others, being independent of any febrile manifestation, and exhibiting distinct intermissions in their severity, it may be concluded that they are of specific paludal nature. I would suggest, however, that intermission may be only the expression of the normal diurnal rhythm which characterises many pathological as well as physiological processes, and which is by no means distinctive of paludism. Should the rhythm prove to be tertian or quartan in character, the probability that the affection is purely paludal would be very much strengthened.

An interesting article on the skin affections of paludism was published by **MM. Verneuil and Merklen** in the *Ann. de Dermat. et Syph.*, November 25, 1882.

3. Tsetse-fly disease.

Bruce's researches on tsetse-fly disease (Blue-Book) have shown that this singular epizootic resembles the surra of India. These researches, which are still proceeding, are of great interest in their bearing on the ætiology of malaria. He shows that the tsetse fly is only the passive bearer of the disease germ from the sick to

the healthy animal, and that the real cause of the disease is a trypanosome like that found in the blood of rats and hamsters in Europe.

4. Treatment of bilious hæmoglobinuric fever.

The recent and rapid extension of British possessions in Africa has entailed a great increase in invaliding and mortality from that worst form of malarial disease variously known as bilious hæmoglobinuric fever, hæmaturic fever, blackwater fever. Long familiar to practitioners on the West Coast, this disease is decimating the missionaries on the Congo, and is claiming a heavy tribute among the officials and settlers in Matabeleland, Mashonaland, on the Zambesi, in Central Africa, and in East Africa. Apparently few districts in the tropical zone of the continent are entirely exempt. Though the highlands as regards endemic disease may be considered fairly healthy and not themselves malarious, yet, as the traveller has first to pass slowly through the unhealthy coast belt in which he is liable to acquire the germs of this deadly disease, the occupation of these healthier regions becomes for the present a matter of danger and difficulty.

The ætiology of hæmoglobinuric fever is still very far from being settled. Some regard it as a form of malarial poisoning pure and simple; others, as **Yersin** who recently discovered a specific bacillus in the urine and kidneys in two cases (*Arch. de Méd. Nav.*, July, 1895), seem to consider that the malarial element, which is certainly present in the majority if not in all cases of the disease, acts merely as a predisposing factor, whilst the true and immediately exciting cause of the hæmoglobinuria is this bacillus or some other germ.

We have very few observations on the plasmodium of hæmoglobinuric fever, and such as we do possess are not sufficiently precise to enable us to say whether it corresponds in all particulars to the already known forms, or whether it is specifically distinct. **Plehn's** observations on this point (*Deutsch. Med. Wochenschr.*, 1895, xxi., 397, 416, 434) at the Cameroons do not go further than to assure us that the plasmodium of blackwater fever resembles the æstivo-autumnal parasites described by the Italians—that is, that it is of the small variety, that it sporulates principally if not exclusively in the central organs of the body, and that it forms crescents. **Thin** seems to think that it exhibits peculiarities of pigmentation (*Trans. Medico-Chir. Soc.*, 1896); but, as yet, even his observations do not warrant any definite conclusion on the point.

If the ætiology of hæmoglobinuric fever is in an unsettled condition, equally so is the pathology and the important

practical question of treatment—the latter particularly so in regard to the employment of quinine. Some maintain that so far from preventing the characteristic and dangerous discharges of hæmoglobin in the urine this drug actually tends to induce them. It is known that in certain very rare individuals quinine does cause hæmoglobinuria even when these individuals are in good health and without suspicion of malarial taint. If, therefore, quinine be given in full doses in malarial conditions—conditions in which, as is well known, the hæmoglobin of the corpuscles is in a very unstable condition—the additional impulse of the drug may be all that is required to produce dissolution of the corpuscles and the consequent hæmoglobinæmia leading to hæmoglobinuria. On the other hand, if quinine be withheld, the patient is deprived of the only drug which can be looked to with any degree of confidence to check the proliferation of the plasmodium. The patient, therefore, is between two stools—the risk from the plasmodium and the risk from the drug.

There is nothing more certain or better established in therapeutics than the antimalarial powers of quinine. Given an ordinary tertian or quartan, and one can prophesy with tolerable confidence that it can be cut short by a few doses of this drug. But, equally certain it is that many African fevers resist quinine; that, though the drug may be given with a free hand, the cases too often march to death in spite of it; and that malignant symptoms, such as hæmoglobinuria, may actually develop whilst the patient is in a condition of cinchonism.

Observing these things, Plehn and others have abandoned the use of quinine in hæmoglobinuric fever, reserving the drug until symptoms of hæmoglobinuria have ceased, and subsequently giving it only if the patient show well-marked indications of intermittent fever.

Recently two methods of treating hæmoglobinuric fever have been advocated; considering the unsatisfactory results of the quinine treatment, they deserve further and careful trial.

5. Chloroform water in hæmoglobinuric fever.

Quenneec (*Arch. de Méd. Nav.*, 1895) describes a treatment of this form of malarial disease by chloroform water. His formula is—Chloroform, 4 to 6 grammes; powdered gum acacia, q.s.; water, 250 grammes. Of this he gives a tablespoonful every ten minutes. In a case of hæmoglobinuric fever, apparently hopeless and in which there was almost complete suppression of urine, together with hiccough and constant vomiting, Quenneec was led to institute this treatment under the idea that the urinary

symptom was dependent on congestion of the internal organs—a congestion which would be relieved, he conjectured, could he by chloroform or other means procure dilatation of the peripheral vessels.

After a very few doses of the chloroform mixture vomiting and hiccough ceased, the patient falling asleep, the harsh skin becoming softer, and the pulse improving. When after four hours the patient awoke, 300 grammes of urine almost free from hæmoglobin and albumen were passed. The same treatment was continued—presumably on a recurrence of the hæmoglobinuria—during the three following days, when the patient entered on convalescence. In this way Quennec treated twenty-two similar and consecutive cases, each with the same happy result. He advises that the chloroform should be pushed until a certain amount of intoxication is produced, when it is to be discontinued, the action of the drug being kept up by enemata of chloral. At the same time he gives small doses of quinine with purgative doses of sulphate of soda and massive injections of cold water and common salt (10 grammes to 1,000 grammes). For food he gives at first small quantities of milk in Vichy water, and subsequently, as convalescence sets in, a pure milk diet.

6. Tannin in malarial fever.

F. Alix (*Arch. de Méd. Nav.*, April, 1895) advocates the use of tannin (preferably the tannin prepared from a mimosa cultivated by Bourelier in the neighbourhood of Algiers, which is less irritating to the stomach than the ordinary kind) in cases of malaria that have resisted ordinary quinine treatment. The tannin is given in solution—4 grammes in 150 grammes of sweetened water. One-fourth of this mixture should be taken fasting, at intervals of two hours, four times on the first day. Abundance of fluid should be swallowed between the doses. Two hours after the last dose some light broth and wine are given. On the following day the drug is not administered, but on the third day, and again on the sixth day, two doses are given. Alix cites several successful cases in illustration of the virtues of this treatment, which, he says, is remarkably efficacious.

7. Ergot in hæmoglobinuric fever.

Berthier (*Arch. de Méd. expériment. et d'Anat. Path.*, September, 1896), who regards the hæmoglobinuria of malarial hæmoglobinuric fever as the result of destruction of blood-corpuscles in congested kidneys, has tried ergot with success in one case. He gave 1 milligramme of ergotin in hypodermically.

8. Analgene in malarial fever.

This drug has also been advocated recently in malaria. The dose is 15 grains two or three times a day. In one case in which the writer employed it the result was disappointing.

9. Hypodermic injections of quinine.

Surg.-Lieut.-Col. P. S. W. Benson, I.M.S. (*Trans. Indian Med. Cong.*, 1895), after an experience of 1,390 cases, reports most favourably on the hypodermic injection of quinine. Latterly he employed the ordinary sulphate—15 grains dissolved, with the aid of hydrochloric acid, in 1 drachm of water. Of this solution he injected 20 minims into the cellular tissue of the back or forearm, taking care to diffuse the injection by gently rubbing and stroking the little swelling. In 614 cases he had no untoward result whatever, such as abscess or sloughing. One injection, he says, usually suffices and cures cases in which quinine by the mouth may fail. On the score of economy, as well as of certainty, this method, provided it is carefully and aseptically practised, is much superior to the ordinary free-handed dispensing of quinine mixture or powder in native dispensary practice.

10. Infantile biliary cirrhosis of Calcutta.

Gibbons, Rose and Sircar discuss (*Trans. First Indian Med. Con.*, 1895) under this name a disease which within the last fifteen or sixteen years has become prevalent in Calcutta and, to a less extent, in other large Indian towns. It is found to be more frequent in Hindu than in Mahomedan children. From 1891 to 1893 inclusive it caused 1,748 deaths in Calcutta, but, whereas there is no great disproportion in the Hindu and Mahomedan populations, 1,616 of the deaths occurred among the Hindus alone, and only 80 among the Mahomedans, the balance being among Eurasians and other races. The disease occurs principally in children under one year, rarely attacking those over three. As a general rule it commences during dentition, about the seventh or eighth month, and runs a fatal course in from three to eight months; but it may begin as early as the third month, or even within a few days of birth, and it may terminate fatally in two or three weeks. The cause is quite unknown. It attacks the children of the well-to-do relatively more frequently than those of the poor. It is observed to run in families, child after child of the same parents succumbing within a year or two of birth. In 400 cases Ghose had only six recoveries, and in some of these even, diagnosis was doubtful.

The symptoms commence insidiously, the characteristic initial enlargement of the liver often making considerable progress

before the disease is suspected. Nausea, occasional vomiting, sallowness, feverishness, constipation, anorexia, irritability of temper, thirst and languor call attention to the child's condition ; on the liver being examined it is found to be much enlarged, extending to the umbilicus, perhaps, or even lower. The surface of the organ is smooth, the edge at first being rounded and prominent. Later, the gland begins to contract and its edge to become sharp, when it can readily be grasped between the fingers, the enlargement feeling hard and resistant. Fever of a low type sets in, the sallowness deepens to profound jaundice, the stools become pale, the urine dark, and ascites with puffiness of the hands and feet appears. Sooner or later death from cholæmia ensues. Gibbons, who gives an elaborate and careful account of the pathological anatomy of the disease, concludes that it is a peculiar form of biliary cirrhosis set up by some irritant of gastric origin on the liver cells, and leading to their degeneration in the first instance with subsequent increase of intercellular connective tissue, and, later, of the portal sheaths. The formation of new bile ducts between the hepatic cells, which is a most marked feature, he regards as a curative process having for its object the regeneration of the cells. As causes, alcohol, syphilis, and malaria may be dismissed ; the cause is yet to find.

Hitherto treatment has proved of no avail. There is some ground for thinking that early removal from the epidemic localities and a complete change of wet nurse and food may have a beneficial effect.

11. *Filaria loa*.

Interesting accounts are given of this West African parasite by Argyll Robertson (*Trans. Ophthalm. Soc.*, 1895), Prof. Ludwig and Saemisch (*Zeitsch. für wissen. Zool.*, No. lx., Heft 4), and Prof. Hirschberg (*Berlin. klin. Woch.*, 1895, No. 44). Argyll Robertson's case is particularly interesting, as the parasite which was removed from the subconjunctival connective tissue of the left eye on September 12th, 1894, was followed by a second parasite, which in its turn was removed on the 13th of the following February. The first was a male, the second a female. Robertson informs me that part of what was probably an example of the same parasite was removed from the leg of the same patient, then in Africa, in 1896. Heretofore the male loa had not been recognised ; Robertson's case and descriptions are therefore of zoological as well as of clinical interest. Logan, of Liverpool, placed a male loa at Robertson's disposal, which also had been removed recently from the eyelid of a European long resident in West Africa. Together these parasites afforded

material for a fairly complete description of the coarse anatomy of this worm. Both the German cases proved to be females and formed the basis of a good description of the anatomy of this sex.

12. Guinea-worm ; treatment by injections of bichloride of mercury.

Blin (*Arch. de Méd. Nav.*, November, 1895) confirms the value of Emily's treatment of guinea-worm. In his hands the average duration of hospital treatment in fifty-four cases of guinea-worm was 4.75 days. Davoren reports two cases (*Brit. Med. Journ.*, October 27, 1894) treated on the same plan; one healed in twelve days and one in fourteen. A case treated by Stanley Boyd by perchloride injection was equally satisfactory.

PUBLIC HEALTH AND HYGIENE.

BY EDWARD FRANCIS WILLOUGHBY, M.D. Lond., D.P.H.

1. Water Supply.

THE winter of 1895-96 was as remarkable for its mildness as the preceding one had been for its severity. In the southern half of the country snow never lay nor did ice bear. The spring, not so warm or early as others of late years, was extraordinarily dry, the drought rivalling that of 1892, and persisting till near the end of July; the succeeding months were marked by a corresponding excess of rain. The previous scarcity was most acutely felt in the case of the East London Water Company, the extension of whose storage reservoirs had been delayed by opposition in Parliament, but is now progressing rapidly towards completion. The general question of the metropolitan supply is little, if at all, nearer solution; all are agreed that it must be increased, that the use of Thames and Lee water is not in itself desirable, requiring strict control and being incapable of extension, and that a central authority would be preferable to the present divided commercial monopolies; but the constitution and functions of this authority, and the financial aspects of the several schemes, are points on which unanimity seems still far distant.

While on the subject of water, it may be well to call attention to the successful application, by Messrs. Defries, of Pasteur's filters to the requirements of communities and the purposes of public supplies, by simple combination of numerous tubes, and the aid of a natural head, or of artificial pressure. Several Indian towns have ordered installations: that for Darjeeling, for which a building 100 feet by 59 feet would afford ample room, giving with a head of 65 feet no less than 150,000 gallons of perfectly germ-free water daily.

2. Sea-Water for London.

A scheme often suggested for supplying the metropolis with sea-water has at length taken definite form, a syndicate having been constituted for the purpose. They propose bringing it in mains and supplying it not only to public baths and private customers, but also to the local and municipal authorities for street-watering and the extinction of fires, for both of which

purposes it offers advantages over fresh water, as well as for flushing the sewers, thus effecting a considerable saving in the consumption of the filtered water of the companies. Sea-water has already been used with great success for municipal purposes at several towns on the coast of England.

3. Cholera.

Cholera has been wholly absent from Europe proper, though Egypt has had a sharp but short visitation; while the number of officers and men who in the late, as in the former, Soudan expedition, have fallen victims to cholera or typhoid, proves conclusively the worthlessness of the army regulation filters, for which the authorities ought to substitute some form of the Pasteur or Berkefeld.

4. Vaccination.

Epidemiologically, the most notable event of the year is the interesting coincidence that, while the centenary of vaccination was being celebrated in every country but England, the city of Gloucester, the birthplace of Jenner, which had gloried in its repudiation of his teachings, was the scene of an outbreak of smallpox that caused over 400 deaths among 2,000 persons attacked, ceasing only when the entire population, save such as had been vaccinated within the last few years, submitted to the operation, so that there is now no better protected town in England.

The centenary of vaccination has been celebrated in nearly every civilised country except his own. In Russia the Society of Public Health has issued a complete edition of the works of Jenner in a Russian translation, formed a collection of vaccination literature in all languages, and offered prizes for the best essays, statistics, or records of original research; and in Japan a bronze statue of the great benefactor of mankind is to be erected in the capital.

The Report of the Royal Commission has at length appeared; with the exception of Dr. Job Collins and Mr. Allanson Picton, the Commissioners are unanimous as to the protection afforded by vaccination, and the need for giving every facility for the employment of calf lymph, as less likely to provoke opposition. But, afraid of the hostility of fanatics, they profess to believe (or to hope) that by giving due consideration to "conscientious objections" and refraining from penal measures, the prejudices against the practice will be weakened, or at any rate not intensified; as if the natural results of voluntary and of compulsory vaccination and revaccination were not sufficiently demonstrated by the prevalence of smallpox in France and its practical extinction in Germany. The

report of the dissentient minority consists of misstated facts and figures, fallacious arguments, or conjectural explanations of awkward facts which will not bear examination, and for which often no evidence is advanced. The report is fair so far as it goes, but very disappointing as to any probable practical results.

Monckton Copeman has continued his researches on the bacteriology of variolous and vaccine lymph, but though there is little doubt as to his having identified and isolated the specific microbe, and having by a certain dilution of vaccine lymph with glycerine and water, eliminated all foreign and antagonistic bacteria, obtaining pure cultures which gain in energy, instead of deteriorating, by being stored in tubes for many months, he has not yet succeeded in his attempt at perpetuating the culture in artificial media, though he was partially successful with hens' eggs, in which the microbes of variola lived and multiplied for some time, and with which he, after a month's incubation, inoculated calves, obtaining from the fourth generation a lymph with which he vaccinated infants.

Freyer, in the *Z. für Hyg.*, reports his successful inoculation of calves with variola and production in the fourth of the series of an excellent vaccine lymph, as had been done by Simpson and King in India, Haccius of Geneva, and Voigt of Hamburg, to say nothing of older experimenters, as Thiele, Badcock, Ceeley, etc. There can be no longer any doubt as to the true nature of vaccinia; that it is not a disease peculiar to the cow, but simply a form of human variola modified by transmission through the bovine organism, and that if we wish to obtain a fresh and more energetic vaccine we must produce it in this way. **Voigt** has recently proved the superiority of the lymph he thus obtained in 1881, by the far greater percentage of failures in the revaccinations of children required by the German law in their fourteenth year, in those for whose primary vaccination his lymph had been used. Of these, no fewer than 30 per cent. proved insusceptible, whereas the failures among those vaccinated with human or so-called calf lymph were not more than from 3 to 7 per cent., the revaccinations being performed under identical conditions and by the same public vaccinators.

5. Disinfection and disinfectants.

Sublimate in solutions of 1 in 1,000 to 1 in 2,000 still holds its ground as the only unfailing germicide, inexpensive, easily used, and in every way suitable for the disinfection of walls, floors, etc.; bedding and clothing being best treated in a steam oven, which no sanitary authority need be without since the appearance of the less costly but not less efficient apparatus of

Capt. Reck or Thresh. But within the last year or two formalin, a 40 per cent. solution of formaldehyde, itself a gas, has been vaunted as a powerful antiseptic and disinfectant alike in the liquid and the gaseous form. In the *Z. f. H.*, xxii. 339, **Prof. E. Pfuhl** describes his experiments on pathogenic microbes in various culture media and at different depths, showing that to ensure success the solutions must contain not less than 5 to 10 per cent., while, like other gases, its unequal diffusion and want of penetration render it quite untrustworthy. **Roux** in the *Ann. Past.* reports no less unfavourably of it. Let us hope that we shall have no more attempts to resuscitate the fetish of "aërial disinfection."

The investigations of **Elsner, Klein**, and others have shown that little reliance can be placed on allegations as to the presence of the bacillus of enteric fever, or Eberth's bacillus in water or milk, since morphologically other faecal organisms, especially the *b. coli*, closely simulate it, though by appropriate cultures and chemical tests, the two may be absolutely differentiated.

6. Anticholera inoculations.

In India **Haffkine** has continued his anticholera inoculations, but the results, though such as might have been expected, have been disappointing to those who would compare them with vaccination. No attenuated virus can have a greater effect than the natural poison, and consequently a partial and transient immunity is all that we have any right to ask or hope for in the case of a disease which, though not apt to relapse, does not, even in its severest forms, afford any protection against recurrence of the infection after one or more years. As with antitoxin prophylaxis in diphtheria, the inoculation, to be of any service, must be made "in the presence of the enemy," that is, in imminent danger of infection—in fact, the antidote may be taken before instead of after the poison; but if the troops or people are led to think that the operation will protect them against future attacks of cholera, as they have learnt that vaccination does against those of small-pox, the false security encouraged by the authorities will be followed by a fearful disillusion.

7. Antistreptococcal inoculations.

The employment of antistreptococcal inoculations has already in a fair number of cases been followed by really brilliant and unprecedented results, in the recovery of otherwise hopeless cases of septicæmia; the improvement coming on almost immediately after the injection, and the premature discontinuance or suspension of the treatment being as regularly followed by relapse, thus leaving no doubt as to the causal relation between the phenomena.

From our present knowledge we may conclude that: (1) when the natural disease confers a permanent or long immunity we may hope to obtain the same protection by attenuated cultures or modified virus; (2) when the natural disease, though liable to recur—that is, not conferring immunity—tends to spontaneous extinction at the end of a definite period of days or weeks, we may obtain a temporary immunity against infection, or, if that have occurred, may anticipate the natural termination of the disease by injections of the antitoxins or alexins with which at a later stage the organism would have attempted, with or without success, to combat the action of the microbes and their products.

8. Bubonic plague.

The outbreak of bubonic plague in Hong Kong afforded an opportunity to bacteriologists, among whom **Prof. Kitasato** secured the honour of priority, for the identification of the bacillus of this disease. Probably by direct intercourse between the two ports, the plague subsequently broke out in Bombay, extending in like manner to some other north-west districts, but the mortality was far less than in the Chinese town.

9. Post-scarlatinal diphtheria.

The question of post-scarlatinal diphtheria, which some were inclined to look on as a complication of scarlatina like the secondary nephritis or synovitis, has been set at rest by the observations and inquiries of **Goodall**, of the North-East Hospital of the Metropolitan Asylums Board, which leave no doubt as to its identity with the non-scarlatinal disease and its being derived from infection in the ordinary way; the difficulty of tracing the source of infection, and its apparent *de novo* occurrence even in institutions from which diphtheria is excluded, being due to the frequency with which the existence of the disease is unrecognised and persons suffering from it are allowed to mix freely with others.

10. Oysters and typhoid fever.

The inquiry into the alleged spread of enteric fever by means of oysters, which was undertaken in the early part of last year by the *British Medical Journal*, was subsequently taken up by the Inspectors under the Local Government Board, while the Medical Officers of Health of several large maritime towns furnished unequivocal cases and added to our knowledge of the methods of oyster-rearing and storing. Many of the assumed cases would not bear examination, but there had been quite enough, isolated or in groups, to call for the full investigation of the question, and the general conclusions of the inquiries have been: that while the different varieties or strains are variously tolerant of salt or fresh water, the oyster is by no means so sensitive to sewage as

interested parties assert; that many oyster-beds, alike in estuaries and along the sea-boards, are exposed to currents of sewage; and that the crates in which the oysters are packed while awaiting transport are often moored close to the mouths of sewers. **Bulstrode** was satisfied as to the gross pollution of the Grimsby and Cleethorpe beds, as I had been of those in the Medina; and while the former were strongly suspected of being concerned in the diffusion of cholera, I had no doubt as to the connection between the epidemics of typhoid at Newport, Isle of Wight, and cases I had reason for ascribing to Medina oysters. Though the several species or varieties are distinguishable without difficulty, no reliance can be placed on their designations in the shops.

11. Tuberculosis and isolation.

Fresh evidence of the communicability of pulmonary tuberculosis is constantly presenting itself, proving the necessity of precautions, though isolation may be impracticable, during life and of disinfection of rooms, clothing, etc., after death. One of the latest is reported by **Kirchner**, from the Cavalry Barracks at Brunswick, where three storekeepers, in perfect health on appointment, were invalided in as many consecutive years from having contracted tuberculous phthisis during their short tenures of office. By means of cultures and experimental inoculations **Kirchner** found that the dust from the accoutrements of troopers who had been discharged as consumptive contained tubercle bacilli and was highly infective.

When the bacillus of tuberculosis was first recognised I expressed the opinion that the disfavour into which each resort for consumptives had fallen in its turn, being superseded by others, was not a mere freak of fashion, but was due to the progressive infection of the houses, people, and perhaps the cows, in each from the aggregation of invalids, the new localities to which patients were sent being as yet free from contamination. Reports from Mentone represent the sad change that has come over the once robust and physically splendid peasantry, who, leaving their farms for lodging-houses and laundries in the service of the visitors, are now sickly, emaciated, and consumptive. The enforcement of precautions and disinfection on the part of the sanitary authorities and the medical men in such places is a duty they owe alike to their patients and to their fellow-townsmen.

12. The health of Arctic expeditions.

The perfect health maintained by Mr. Jackson's party in Franz Josef's Land, by the crew of the *Fram*, and even by Dr. Nansen and Lieut. Johansen during a winter on the ice has shown that medical science is equal to the solution of climatic

and dietetic problems under any conceivable conditions, and that, should it be deemed expedient to establish permanent meteorological stations in the Polar regions, their occupants may enjoy, as at Elmwood, all the comforts (and even amenities) of civilised life. It shows, too, the fearful responsibility of the leaders of Arctic expeditions which have been decimated by scurvy and otherwise suffered from disease and death.

13. The inspection of factories: an excellent appointment.

The appointment of Dr. Whitelegge to the post of H.M. Chief Inspector of Factories is one which does credit to the judgment and independence of Sir M. White Ridley, the present Home Secretary, being the first instance in which a member of the medical profession has been preferred to such a position. Dr. Whitelegge, as Medical Officer of Health to the County Council of the West Riding, has had a wide experience of the conditions of the manufacturing population; and we believe that it was the impression made on the Home Secretary by his able and valuable evidence before the recent Royal Commission on the Factory Acts that led to the selection of Dr. Whitelegge for the important post, from his tenure of which the best results may be confidently expected.

14. Ice-creams.

Something like a scare followed the publication of the result of the bacteriological examinations of ice-creams by Klein, Kanthack, Anderson of Blackpool, and others, who found the numbers of colonies in gelatine cultures to range from 100,000 to 8, 10, or even 14 millions per c.cm., a large proportion of these being those of *b. coli*, and evidence of immediate or remote faecal contamination. But their significance was somewhat discounted by the discovery that, however uncleanly the habits of the Italian street vendors might be, bacteria were often more numerous in those purchased at the best City and West-End confectioners, their numbers being to a great extent dependent on the amount of cream used in the composition of the ice, and the question resolving itself essentially into one of milk control.

MEDICAL JURISPRUDENCE.

BY ARTHUR P. LUFF, M.D., B.Sc.LOND., F.R.C.P.

Physician to Out-patients and Lecturer on Forensic Medicine to St. Mary's Hospital.

1. The signs of death.

DURING the past year the question of the possibility of the interment of living beings has been exercising the minds of a portion of the public, whose fears have found expression in a series of letters to some of the daily papers. In the majority of the letters the writers make no attempt at the production of evidence in support of their beliefs or fears; whilst the cases of alleged premature interment mentioned by the few have, on investigation, proved to be either myths or to be destitute of foundation. The possibility of apparent death being mistaken for real death can only occur, even to ignorant persons, during the period preceding putrefaction. During this period various signs of death appear, which, judged by a medical man, and taken collectively, allow of an absolute opinion being given as to the reality of death. The signs that furnish the best evidence of the reality of death, prior to the commencement of putrefactive changes, are: (1) The absence of circulation and respiration; (2) the gradual cooling of the body, the extremities cooling first and the trunk last; (3) the gradual supervention of *rigor mortis*; (4) the production of *post-mortem* stains or ecchymoses. The careful use of the stethoscope by a medical man will alone enable him to distinguish a living from a dead body.

Certain forms of rigidity that may occur during life are occasionally stated to have been mistaken for cadaveric rigidity. During life rigidity may occur from tetanus, apoplexy, catalepsy, syncope, asphyxia, and hysterical spasm, but it presents these three striking differences from cadaveric rigidity: (1) the warmth of the body is preserved; (2) the whole of the body becomes equally rigid at the same moment, whereas, in connection with *rigor mortis*, the rigidity usually commences in the muscles of the neck and lower jaw, and then gradually affects the other parts of the body; (3) if a joint be forcibly bent, such as the arm at the elbow, the limb will, if in a state of spasm from

disease, return to its original position when the bending force is removed, whereas if it be in a state of *rigor mortis* it will not.

2. Permanganate of potassium as an antidote for opium and morphine poisoning.

A. P. Luff (*Brit. Med. Journ.*, May 16, 1896) has investigated the property alleged to be possessed by potassium permanganate of destroying morphine before it is itself attacked and rendered useless by the stomach contents. He found that by mixing morphine with quantities of vomit obtained from human beings, and subsequently adding solution of potassium permanganate slightly in excess of that required to destroy all the morphine present, the morphine was completely destroyed prior to the reduction of the permanganate by the ordinary contents of the stomach. Luff therefore confirms Moore's conclusions as to the value of potassium permanganate as an antidote for opium and morphine poisoning. When the quantity of morphine that has been taken is known, he recommends the administration of a quantity of permanganate slightly in excess of the morphine; if it is laudanum that has been taken, and the quantity is known, 6 grains of permanganate should be administered for each fluid ounce of laudanum taken. If in any case the quantity of morphine or opium taken is unknown, from 8 grains to 10 grains of the permanganate should be administered according to the severity of the symptoms.

It should be given dissolved in from 4 ounces to 8 ounces of water. The stomach should afterwards be washed out two or three times, at intervals of half an hour, with a weak solution of permanganate, in order to decompose the morphine that has been absorbed and that is being excreted into the stomach.

In cases of poisoning by the hypodermic injection of morphine the hypodermic injection of permanganate is not of use, but the washing out of the stomach with the weak solution of permanganate should certainly be resorted to, owing to the fact that morphine circulating in the blood is excreted in considerable quantity by the stomach, and such excretion by the stomach continues for about one hour after the hypodermic injection of the morphine.

In cases of threatened respiratory failure strychnine or atropine (the former preferably) should be administered hypodermically, in order to stimulate the respiratory centre, and artificial respiration should be resorted to if necessary. The walking about of the patient should be avoided, as it has a great tendency to exhaust the vital powers. The dragging about of a patient in a comatose condition is worse than useless.

3. Bromide of potassium poisoning.

A case is reported (*Lancet*, April 4, 1896) of death apparently due to excessive indulgence in this drug. A man, suffering from neuralgia, had been in the habit of taking this salt in doses of from two to three drachms. He frequently complained of palpitation of the heart, but the drug did not produce any of the usual symptoms of bromism. One night he suddenly expired, death being attributed to failure of the heart's action caused by taking the bromide.

4. Death under pental.

Pental, which is an isomeric modification of amylene, has recently been used somewhat extensively as an anæsthetic in dental practice. It is a very volatile liquid, and is administered similarly to chloroform. Wood and Cerna some time ago warned against its use, as they considered it to be a dangerous cardiac depressant. Rüth, however, in 1894, came to the opposite conclusion, and asserted that pental was a safer agent than chloroform, and possessed many advantages over laughing-gas. A case has been reported (*Lancet*, January 4, 1896) of death from this anæsthetic. A woman aged twenty-three was put under its influence for the purpose of having several teeth extracted. After the extraction of five teeth her respiration ceased, and none of the means adopted to restore her succeeded.

5. Cannabis indica poisoning.

J. Attlee (*Brit. Med. Journ.*, October 3, 1896) reports a case in which symptoms of poisoning were produced by a very small dose of this drug. A boy aged twelve years took 10 minims of the tincture of cannabis indica, and a few minutes later toxic symptoms developed. He became strange in his manner, stated that his legs were jumping about, that he heard a ticking like a watch, that he saw the room on fire, and that the pictures were falling down. He walked with considerable difficulty, and only then when assisted. His pulse was 120, scarcely perceptible at the wrist, and he was much collapsed. He was covered with blankets, hot brandy and water were administered, and a blister was applied to the nape of the neck. He rapidly revived, and in two hours and a half all toxic symptoms had passed off.

6. Phenacetin idiosyncrasy.

W. A. Betts (*Brit. Med. Journ.*, January 18, 1896) reports a case in which a man, aged forty years, suffering from neuralgic headache took three doses of phenacetin, each consisting of 8 grains, with intervals of three hours between each dose. Soon after taking the third dose he was seized with shivering, inspiratory dyspnoea, and profuse sweating from the forehead. The

face became a dark, almost mahogany, colour, and large wheals of a somewhat similar colour appeared on the back of each hand, and on the right shoulder where it happened to be exposed. The temperature was subnormal, and the pulse rapid and feeble. Under the influence of stimulants and warmth the patient made a rapid recovery.

7. Pyrogallic acid poisoning.

A case is reported (*Pharm. Journ.*, September 19, 1896) of the wife of a medical man accidentally drinking a solution containing $\frac{1}{4}$ oz. of pyrogallic acid in $1\frac{1}{2}$ oz. of water, the solution having been prepared for photographic purposes. Death occurred from perforation of the stomach four days later. Although fatal cases of pyrogallic acid poisoning, after the external application of the drug in the form of an ointment, have been recorded, it is believed that this is the first fatal case due to its internal use.

8. Acetanilide (antifebrin) poisoning.

A case is reported (*Pharm. Journ.*, July 4, 1896) in which the death of a young woman occurred shortly after taking about 10 grains of this drug. The drug was purchased in the form of a headache powder advertised as the "Daisy Powders." Death was apparently due to cardiac failure. The case illustrates the danger of allowing such a drug to be sold indiscriminately to the public.

9. Meat poisoning.

Several cases of meat poisoning have been recorded during the past year. Apart from added poison and from parasitic disease, meat may become toxic from the following causes:—(1) The poisonous effects may be due to food conveying a true infection, owing to micro-organisms developing in the meat subsequently to slaughter; (2) poisons may be developed in and from the food by bacterial agency, such poisons being either ptomaines or toxalbumoses; (3) the poisonous results may be due to the presence in the food of the germs or spores of certain specific diseases. Therefore, in food that has become poisonous by keeping, one or both of these two conditions obtain—viz. a living microscopic organism and an organic chemical poison. In those cases of food-poisoning where an incubation period occurs the poisonous effects are due to the food conveying a true infection; in those cases where the symptoms of acute gastro-enteritis occur from half an hour to a few hours after taking the food, they are probably due to the action of an organic chemical poison previously produced in the food.

In most cases of meat poisoning the following prescription will be found useful. This medicine acts as an intestinal antiseptic, as a sedative to the inflamed mucous membrane, and

probably as an antidote to the ptomaine or toxalbumose which is the direct cause of the symptoms. The dose is for an adult, and should be administered every three or four hours until the effects of the poison have passed away :—

R Liq. Hydrarg. Perchlor. $\mathfrak{m}\text{xx}$.
 Potass. Iodidi, grs. v.
 Chloral Hydrat. grs. v.
 Acid. Carbolic. gr. j.
 Sp. Ammon. Arom., $\mathfrak{m}\text{xx}$.
 Aq. Chloroformi ad $\mathfrak{z}\text{j}$.
 One dose.

10. Poisonous honey.

L. F. Kebler (*Med. and Surg. Rep.*, September, 1896) reports the cases of a man and his wife who suffered from severe symptoms of poisoning after taking a small quantity of honey each. The symptoms commenced in from fifteen to twenty minutes and consisted of nausea, abdominal pain, vomiting, loss of consciousness, and profound collapse. Recovery gradually took place, though the restoration to strength was very slow. From some experiments made with the honey it seems probable that the poison was a glucoside, and it is possible that it may have been present in certain flowers from which it was withdrawn by the bees.

11. Coppered peas.

An important prosecution for the sale of coppered peas occurred in London in 1896. It was decided by the judge that the presence of copper in the peas in quantity equivalent to 3·16 grains of sulphate of copper to the pound of peas was likely to be injurious to health; the full penalty was inflicted. Although there is generally considerable argument in connection with cases of prosecution in the courts as to whether coppered peas are injurious to health, yet some cases recently reported (*Lancet*, August 29, 1896) leave little room for doubt that the practice of coppering peas is dangerous and should be prohibited by law. Several people were attacked with symptoms of acute gastro-enteritis after partaking of a banquet at which tinned peas had been used. In three alvine evacuations, five urines, and one vomit copper was found. All the persons who suffered had partaken of the tinned peas. On examining tins of peas similar in brand to those used at the banquet, some were found to contain as much as 6 grains of copper sulphate per pound, the majority between 3 and 4 grains.

12. Death in colliery explosions.

J. Haldane, in a Blue Book prepared for the Home Department, deals with the causes of death in colliery explosions. He divides

the victims into two classes—those killed by after-damp and those killed instantaneously by violence. The former class comprised 91 per cent. of the whole in the explosions investigated by him. Formerly the lethal agent in after-damp was supposed to be carbonic acid gas, but Haldane's investigations demonstrate that the inhalation of after-damp causes death by carbon monoxide (carbonic oxide) poisoning. This was shown by the pinkness of the lips and the general life-like appearance of the bodies, as well as by the spectroscopic examination of blood taken from both men and horses, which demonstrated the presence of CO-hæmoglobin.

With regard to the treatment of those cases recovered alive, Haldane considers that the administration of oxygen and artificial respiration would be of service in rapidly clearing the blood of carbon monoxide, and, when possible, the application of hot-water bottles and blankets should be resorted to. The first effect of cool fresh air appears to be dangerous, due either to the cold diminishing the blood-supply to the brain, or to previous reduction of the body temperature.

13. Artificial respiration.

Calliano (*Gazz. degli Osped.*, August 16, 1896) describes a new method of artificial respiration. The patient is placed in Sylvester's position, and the arms are then drawn up so as to expand the thorax, and are then fixed above and behind the head by tying the wrists together. In this position respiration is induced by pressing with the hands on the thorax about eighteen times a minute. The advantages claimed for this method are—(1) simplicity; (2) that it is less fatiguing to the operator than Sylvester's method; (3) absence of danger of bruising the shoulder-joints; (4) ease with which the method may be taught to and practised by untrained people.

A. E. Wright (*Brit. Med. Journ.*, January 25, 1896), from experiments made on animals, suggests that cases of chloroform collapse should be treated by dividing both temporal arteries before proceeding to apply artificial respiration—the method therefore being one of combined arterial bleeding and artificial respiration. Wright also draws attention to the utility of preliminary injections of atropine as a means of preventing the fatalities which occur in the early stages of chloroform administration. This treatment is directed to the prevention of the heart stoppage which, in the case of early chloroform collapse, appears generally to be brought about by the inhibitory action of the vagus. Atropine removes this source of danger by paralysing the nerve-endings of the inhibitory fibres in the heart.

14. Dying declarations.

Two cases have occurred in England during the past year in which the judges refused to accept dying declarations as evidence, owing to irregularities in the way of taking the declarations by the medical men concerned in the cases.

It may therefore be as well to point out what are the duties of a medical man when a dying person desires to make a declaration. If a magistrate or other legal functionary be present, his only duty is to give an opinion as to whether the dying person is in a sound mental condition or otherwise; but if no legal functionary be present, then it is the duty of the medical man to receive the declaration or confession. He must ascertain that the dying person believes that he or she is in actual danger of death, and that recovery is impossible, and the statement of this belief must be included in the declaration. For the rest, the medical man should simply write down the identical words voluntarily uttered by the sick person, then read them over to him, and, if possible, get the dying person to sign the declaration.

15. Medical men in courts of law.

The following extract from the summing-up of Mr. Justice Hawkins in the case of *Kitson v. Playfair and Wife* (Queen's Bench Div., 1896) is of interest to members of the medical profession:—"The medical men called said that there were two exceptions to the rule imposing on them secrecy as to confidences gained during professional attendance. The first was as to giving evidence in a court of law. He did not altogether agree with what they said as to that. It all depended upon the judge. The judge himself might, in some cases, refuse to commit a medical man for contempt in refusing to reveal confidences. Each case would be governed by the particular circumstances, and the ruling of the judge, deciding no doubt, according to the law, would be the test. Secondly, they said that if there were circumstances from which they supposed a crime was intended to be committed, they would have to inform the Public Prosecutor. If the doctor were called in merely to attend a woman needing physical aid, his lordship doubted very much whether he would be justified in going to the police and saying—'I have attended a poor woman who has been trying to procure an abortion.' That would be a monstrous cruelty. Therefore, to say that there was a general rule was going too far. There were cases, no doubt, in which it was obvious that a medical man should inform. He only protested against that rule being said to be applicable to all cases."

SUMMARY OF THE THERAPEUTICS OF THE YEAR 1895-96,

CHIEFLY IN REFERENCE TO NEW REMEDIES.

BY NESTOR TIRARD, M.D. LOND., F.R.C.P.,

Professor of Materia Medica and Therapeutics, King's College, London; Physician to King's College Hospital, and to the Evelina Hospital for Sick Children.

THE main interest of the year has centred in the various forms of treatment with antitoxins; and evidence continues to accumulate, indicating that for diphtheria at least we possess in antitoxic serum "a remedy of distinctly greater value than any other with which we are acquainted" ("Report of the Medical Superintendents of the Metropolitan Asylums Board"). The use of antitoxin for tetanus, of antivenene for snake bites, of antistreptococcus serum, and of many others, continues to attract attention, though, for the present, many are disposed to wait for further evidence of their value. The patient investigation of the claims of the serum treatment has not, however, prevented the accomplishment of a great deal of sound work, which has included in its scope a consideration of older remedies, as well as of those of more recent introduction. Experience has shown that toxic symptoms may arise from the incautious use of many drugs, and a few words of warning as to the means of minimising risks may fitly find a place in these pages. Considerations of the victorious march of progress, even in therapeutics, should not render us unmindful of possible dangers in the ground already traversed. Sundry suggestions have been made for facilitating the employment of older remedies which have recently, perhaps, been somewhat neglected owing to the introduction of more palatable preparations. The new remedies which claim attention are not so numerous as usual, and with the exception, perhaps, of eucaine, it cannot be said that they present any striking characteristics. Many are synthetic preparations; some are recommended as antiseptics, others as soothing local applications, while others are astringent, both locally and after absorption.

A.—TOXIC EFFECTS : THEIR SYMPTOMS AND TREATMENT.

1. Cocaine.

Sallard, in the *Rev. de Thérap. Méd.-Chir.* of March 15, 1896, quoted in the *Therap. Gaz.* of July, 1896, gives details of toxic symptoms observed after the injection of cocaine as a local anæsthetic. He describes, in most cases, a brief and fleeting vertigo, which is sometimes followed by great excitement of the nervous system, together with a tingling in the extremities, and frequently associated with flushing of the skin, followed by pallor. In some cases he has noticed wild gesticulations and active, talkative delirium. Occasionally the vertigo leads to nausea, or symptoms similar to sea-sickness, and in extreme conditions he has noticed semi-stupor and great palpitation. Mostly there is marked pallor, the pupils are dilated, the extremities are cold, and there is profuse sweating. These symptoms appear ordinarily to last from one to two hours. Sallard states that the alarming nature of these symptoms may be greatly diminished by the use of nitroglycerine; and Glück asserts that phenate of cocaine is also free from any risk of producing toxic effects, even when used in large doses. The treatment advocated by Sallard is that which was naturally suggested by the nature of the symptoms. The patient should be kept flat on his back, respiration and circulation should be stimulated by flicking the chest and the face with hot and cold towels, as in a case of opium poisoning. Ammonia may be used by inhalation, and if necessary, also nitrite of amyl for extreme cases. He suggests the hypodermic injection of ether and caffeine to counteract these risks from cocaine. In addition to these I would suggest strychnine and digitalin; the former, with brandy, has speedily relieved urgent symptoms.

F. de Havilland Hall (*Brit. Med. Journ.*, February 8, 1896, p. 335) states that he always uses resorcin with cocaine. He employs a solution containing 10 per cent. of resorcin with 20 per cent. of hydrochlorate of cocaine, and he finds that the resorcin diminishes the toxic effect of cocaine, while it increases the anæsthetic effect of the solution, and it also prevents the cocaine from crystallising out. The antiseptic properties of resorcin are of value in preventing alterations in the composition of the solution. He states that he entirely disapproves of the use of the spray for applying cocaine to the nose. He has found that the best antidotes for toxic symptoms due to cocaine when used as spray are ammonia and nitrite of amyl, and he recommends that these should always be kept at hand so that time may not be lost

in sending to a chemist on any emergency. Since he has used this double solution of resorcin and cocaine, even slight toxic symptoms have been of rare occurrence in his practice.

Weinrich (*Berl. klin. Woch.*, March 23, 1896) has written upon toxic symptoms produced by cocaine when employed for the urinary passages, and he refers the symptoms almost entirely to the nervous system. In addition to stupor, vertigo, and headache, he notes occasional collapse with severe præcordial anxiety, otherwise the symptoms detailed are extremely like those above described; but he points out that danger may be anticipated if the respiratory system is much involved, and he considers that the symptoms due to the influence upon the circulatory system, although well marked, are of secondary importance. He states that cocaine can undoubtedly be absorbed from the bladder, although the degree of absorption is slight. He considers the use of cocaine contra-indicated in cardiac and vascular diseases, and in pernicious anæmia. In the treatment, he recommends the administration of chloroform if tonic or clonic spasms are noted, and he lays stress upon the importance of artificial respiration. To combat the likelihood of toxic effects from cocaine, he is in favour of employing a small quantity of nitroglycerine in the solution of hydrochlorate of cocaine.

The dangers of the formation of the cocaine habit have been dwelt upon in the paper above mentioned by Sallard, and this is also emphasised by the narration of a case in the *Brit. Med. Journ.* of July 18, 1896, in which it appeared that a daily dose of 30 grains had been taken, probably for two years. At the end of this time the patient was in a state of extreme nervous prostration, and mentally and morally affected; fits of depression varied with times of unusual brightness and activity. Sallard states that in chronic cases he has observed loss of appetite, cardiac palpitation, headache and vertigo, ultimately followed by hallucinations or delusions. The hallucinations of sound were present in a case that has been under my own observation, and although the delusions were very vivid to the patient, they were not sufficient to justify putting any restraint upon him. Sallard recommends that cases of chronic cocainism should be placed under sufficient control to regulate and reduce gradually the amount of cocaine taken. He advocates also the employment of hydrotherapy, and as so many of these cases suffer from sleeplessness and misery when the cocaine is withheld, he advocates the use of chloral, trional, or sulphonal. I have found some advantage from the use of phenacetin in these cases.

2. Hyoscine.

Although there is a general tendency to employ hyoscine, many observers have indicated that occasionally severe symptoms may result from small doses. **R. A. Morton**, in the *Brit. Med. Journ.* of February 8, 1896, p. 336, describes the serious symptoms produced by the instillation of 4 drops of 1 per cent. solution of hydrobromate of hyoscine. Five minutes after the drops had been put into the eyes, the patient complained of giddiness, staggering, dryness of the mouth and throat, complete muscular relaxation, and then became unconscious. The breathing was slow, deep, and sighing, the pulse full and regular. She remained unconscious for four hours, and then for two hours she had delirium of an amusing type, uttering various jokes and witticisms. Then she fell asleep for an hour and a half, and on awakening was completely unconscious of all that had happened.

3. Bromoform.

Börger (*Münch. med. Woch.*, May 19, 1896) gives details of two cases of poisoning with bromoform, and he summarises the symptoms of twelve other cases. The patients were all under five and a half years old; the dose of bromoform varied from 15 to 20 minims; the symptoms included sudden unconsciousness, pallor of the face and blueness of the lips, which occurred shortly after the use of the drug. The pupils were contracted and did not react to light; the pulse was feeble and rapid. It has been asserted that the first and most important toxic action is exercised upon the brain and the respiratory centres. To counteract the toxic symptoms of bromoform, injections of ether and camphor may be made to stimulate the circulation, artificial respiration and faradisation of the phrenic nerves should be adopted, and perhaps advantage may accrue from the employment of small doses of morphine or inhalations of amyl nitrite.

4. Sulphonal.

Some time back **Stokvis** stated that when sulphonal was administered to rabbits it frequently produced hæmatoporphyrinuria. **Kast** and **Weiss** have been investigating the subject (*Berl. klin. Woch.*, July 13, 1896) and find that, although in rabbits a markedly dark brown colour of urobilin was produced, they were never able to obtain hæmatoporphyrin. They maintain that sulphonal in medicinal doses is a harmless remedy, although they admit that under certain pathological conditions, especially in anæmic women and in obstinate constipation, immoderate doses of sulphonal may cause the appearance of hæmatoporphyrin in very acid urine. The authors draw attention to the variety of cases in which hæmatoporphyrinuria has been noted, and they

state that these results are also borne out in the case of trional, in which even so-called cumulative action does not exist.

5. Lactophenin.

Wenzel (*Brit. Med. Journ. Epit.*, March 7, 1896) points out that many antipyretics and analgesics belonging to the phenetidid group owe their toxic properties to their splitting up into paramidophenol, which is a poison to red cells, and after a time produces cyanosis and collapse. Vomiting, slight cyanosis, disturbance in the heart's action, and severe collapse have been noted with lactophenin by numerous observers. Wenzel records a case in which, while lactophenin was being given, jaundice suddenly supervened, the urine became deeply bile-stained, and nausea and vomiting occurred.

6. Opium poisoning and permanganate of potassium.

The treatment of opium poisoning by permanganate of potassium, which was originally suggested by Dr. Barber Smith in 1884, and formed the subject of a paper by Dr. William Moor in the *Brit. Med. Journ.* of June 22, 1895, has been further investigated by F. P. Maynard (*Brit. Med. Journ.*, May 16, 1896), who, as resident physician at the Medical College Hospital, Calcutta, has had unusual opportunities of seeing and treating cases of opium poisoning. He concludes that permanganate of potassium is a strictly *local* antidote, which can only act upon such opium as it comes into contact with in the stomach, and can have no effect upon such as has already been absorbed; that it oxidises morphine re-excreted into the stomach does not affect this statement. He considers that the treatment is excellent as leading to thorough washing out of the stomach, and at the same time affording a reliable indication when this is accomplished, but he does not expect that it will be found to save life where a lethal quantity has already been absorbed into the circulation; nor can permanganate, in his opinion, be regarded as a physiological antidote to opium, such as eserine is to atropine.

These remarks have considerable value, as they approach the subject from the clinical side; from the experimental side Luff (*Brit. Med. Journ.*, May 16, 1896) recommends that the permanganate should be dissolved in from 4 to 8 ounces of water, that the stomach should be washed out two or three times, at intervals of half an hour, with a weak solution of permanganate, in order to decompose morphine that has been absorbed and is being excreted into the stomach. Luff is of opinion that in cases of poisoning by the hypodermic injection of morphine the hypodermic injection of permanganate would not be of any use, but

that the washing out of the stomach with the weak solution of the permanganate should certainly be resorted to. In cases of threatened respiratory failure, he recommends the subcutaneous injection of strychnine or atropine, and a resort to artificial respiration if necessary.

In the *Brit. Med. Journ.* of June 13, 1896, Vutchetitch narrates a case of recovery after the subcutaneous injection of a Pravaz syringeful of a 1 per cent. solution of permanganate of potassium and the simultaneous employment of a teaspoonful of the solution internally. The internal administration of the antidote was continued at first hourly, and later every two hours. Complete recovery resulted after fifteen hours. The patient was a child two and a half years old, who had accidentally swallowed from 25 to 50 drops of *tinctura opii simplex* (*Ph. Germ.*).

B.—OLDER REMEDIES: MODES OF ADMINISTRATION.

7. Quinine.

Much has been written during the year on various methods of employing quinine, the leading idea appearing to be to devise some method of administration which shall be free from unpleasant taste while preserving the physiological effects. Blum, a French army surgeon (*Journ. des Prat.*, March 21, 1896), recommends the employment of hypodermic injections of quinine. The formula he uses is as follows:—

R	Hydrochl. of Quinine	...	...	...	45 grains
	Antipyrin...	...	...	...	30 "
	Distilled Water	...	...	...	1½ drachm.

He recommends that the solution should be made by boiling in a test tube and filtering while boiling hot through a sterile piece of muslin or a sterile paper. Of this solution he gives 15 minims for a dose for adults, and when the quinine is employed in malarial fever, he advises that half a drachm of ether be injected simultaneously. The antipyrin in the above is said to exercise an influence upon the nervous system, as well as to reduce the temperature. The author says that these injections are absolutely painless, but the editor of the *Therap. Gaz.*, in quoting these particulars (August, 1896), draws attention to the general experience that injections of antipyrin always cause considerable pain when first given.

Binz (*Deut. med. Woch.*, September 3, 1896) suggests that quinine may be given to children in the following forms:—(1) Quinine pearls, gelatine capsules containing a grain and a half;

(2) quinine chocolate, each piece containing a grain and a half ; and it is said that the bitter taste was so well covered that infants of nine months old took them ; (3) suppositories made up of cocoa butter and containing various doses up to $7\frac{1}{2}$ grains ; (4) a hypodermic solution of one part of hydrochlorate of quinine and four parts of water ; (5) in the form of an enema—the quantity of solution used should not exceed one ounce ; (6) tannate of quinine is almost tasteless as a powder, and is a fairly satisfactory substitute for other preparations, but the dose must be double that of the sulphate, and the effects are not produced so rapidly or so certainly.

Dunbar Brunton (*Brit. Med. Journ.*, September 19, 1896) also recommends the employment of quinine as a suppository. He uses suppositories containing 15 grains of the sulphate of quinine in a case of malarial fever, and he administered one every six hours. On previous occasions, when the patient had taken quinine by the mouth, she had suffered from the greatest discomfort, nausea, indigestion and bad headache, with much ringing in the ears. These symptoms were absent when the quinine was administered as a suppository, although the effect upon the temperature is stated to be as certain as when the quinine is given by the mouth.

An effervescing quinine mixture has been recommended, consisting of—

R	Sulphate of Quinine	...	...	...	...	2 grains
	Citric Acid	...	...	...	...	6 „
	Simple Syrup	...	...	...	...	$\frac{1}{2}$ drachm
	Syrup of Orange Flowers	...	...	...	...	$\frac{1}{2}$ „

This is to be placed in a wineglass containing bicarbonate of sodium, from 3 to 5 grains in a saturated solution, and taken while effervescing.

In the *Lancet* of January 25, **Thin** speaks forcibly of the prophylactic action of quinine. He recommends that five grains should be given daily two days before entering a malarial district, and that its use should be continued while there is any fear of malarial infection. He considers that the quinine should be given in solution rather than in the form of a powder, and he states that this dose will suffice to kill “the young naked spore of the malarial parasite” without prejudicially affecting the general health.

8. Guaiacum.

The use of guaiacum in the treatment of chronic gouty affections, and its value in warding off gouty attacks, formed

the subject of an interesting communication from **Sir Alfred Garrod** to the Royal Medical and Chirurgical Society (*Lancet*, May 30, 1896). Sir Alfred considers he has succeeded in establishing the following points :—(1) Guaiacum is innocuous, and may be taken for an indefinite period of time, and looked upon as a condiment rather than as a drug—as harmless as ginger or any other condiment. (2) Guaiacum possesses a considerable power, but less than colchicum, in directly relieving patients suffering from gouty inflammation of any part. It may be given whenever there is but little fever. (3) Guaiacum, taken in the intervals of gouty attacks, has a considerable power of averting their recurrence—in fact, it is a very powerful prophylactic. (4) Guaiacum does not appear to lose its prophylactic power by long-continued use. (5) There are a few persons who cannot readily continue the use of guaiacum, and for such cases there are other drugs whose action is, in some respects, similar as prophylactics; of these, perhaps serpentary is one of the most powerful. Sir Alfred Garrod considers that guaiacum does not affect the formation of uric acid, but that it acts directly on the kidney itself as a stimulant, enables it to get rid of any accumulation in the tubules, and thus prevents absorption from them into the blood.

In the discussion upon this paper, **Murrell** referred to the difficulty of administering the preparations of guaiacum of the British Pharmacopœia, and said he had made a confection containing 10 grains in 1 drachm of honey, 1 or 2 drachms being given three times daily immediately after meals. He also referred to a disadvantage of guaiacum, which, in my own practice, has in many cases checked the more frequent use of this drug—namely, its occasional action as a powerful purgative.

9. Charcoal.

There can be no doubt that, as a therapeutic agent, charcoal has of late years fallen out of fashion; this is, perhaps, the result of the frequent assertions that it can only absorb gases when dry, and that, if it acts at all, it acts mechanically by removing mucus, or by stimulating the circulation and peristaltic movements. **R. B. Wild** (*Med. Chron.*, March, 1896) has been endeavouring to ascertain whether these assertions are well founded, and he has made a series of experiments to determine whether charcoal is an efficient deodoriser and oxidiser of organic substances when used in the wet state. He finds that it is not an antiseptic or disinfectant—that, instead of retarding, it hastens decomposition;

and he thinks that too little stress has been laid upon its power of oxidising organic matter in solution. His experiments show that charcoal—whether dry or mixed with water—is a powerful oxidising agent, which, being non-poisonous, can be administered in large doses. For external use it is undoubtedly, as Wild says, “a very dirty application if used in sufficient quantity”; but when there is undue decomposition of the contents of the alimentary canal, as in dilatation of the stomach, or when the alimentary canal contains abnormal toxic substances, charcoal appears worthy of further trial. Although it is devoid of antiseptic properties, it may act by oxidising the chemical substances formed during abnormal decomposition, or the various toxins produced by pathogenic organisms. Wild clearly thinks we have been too hasty in discarding charcoal out of deference to theoretical objections. We have perhaps neglected a useful remedy while seeking new intestinal antiseptics which, like a well-regulated torpedo, shall only exert force at the intended locality after a period of placid inactivity.

10. Iron.

Da Costa (*Ther. Gaz.*, May 15, 1896) recommends the hypodermic use of iron where a rapid action is required, and he thinks the best preparation for this purpose is the ferrous manganese citrate. He gives 3 grains for a dose, or 15 minims of a 20 per cent. solution. He does not suggest that the hypodermic method should be used indiscriminately; it should be reserved for cases where rapid action is needed, as after exhausting hæmorrhages, or in anæmic persons with delicate digestions who cannot assimilate iron by the stomach, or in gastric ulcer where it is desirable to prescribe iron, or when iron by the mouth constipates excessively, or when a decided action on the nervous system is required.

The laborious investigations involved by the recent discussions concerning the absorption of iron salts when taken internally are well shown by the able article by Leech (*Med. Chron.*, September, 1896), in which the results of much experimental work are summarised. In calm, judicial fashion, Leech reviews the evidence brought forward by the different observers, and he endeavours to extract the truth. Is the iron administered internally absorbed by the intestinal canal? Does it possess the power of preventing changes in the food, or does it act by exerting a stimulating influence on the mucous membrane? Leech concludes that the experiments that have recently been made on lower animals by so many observers certainly seem to show that iron in its various compounds is absorbed by

the small intestine, or at least by the duodenum. It is stored up in various organs, chiefly in the liver and spleen, and this store is used for the formation of hæmoglobin. It is excreted chiefly by the large intestine, but may pass out in other ways. What takes place in the mouse, rabbit, and other animals also probably takes place in man, though there may be slight differences in the exact method of absorption and excretion between man and other animals. Interesting as all such inquiries are, it is to be hoped that the administration of compounds of iron will not be hindered by the uncertainty of pharmacologists about the explanation of their effects. The effects of the administration of iron are sufficiently obvious for practical purposes. Theories of explanation are of secondary importance, even when backed by experimental evidence, especially when this gives results contrary to clinical experience.

11. Piperazine.

According to E. D. Mapother (*Lancet*, February 8, 1896), piperazine may sometimes, when employed as a solvent for urates, fail to produce satisfactory results, owing to its administration with vegetable tinctures or infusions. Mapother thinks it is incompatible with these, and urges that it should be dissolved in distilled water and taken on an empty stomach.

12. Iodide of potassium.

Calomenopoulo (*Therap. Gaz.*, September 15, 1896) states that chlorate of sodium enables patients to take iodide of potassium without symptoms of iodism, and that this desirable result may be attained even when iodide of sodium has been tried unsuccessfully. He gives an account of a patient who was able to take 90 grains of chlorate of sodium and 45 grains of iodide of potassium in the day.

C.—NEW REMEDIES.

I.—ANTISEPTICS.

13. Salacetol.

Salacetol is a white powder crystallising in fine needles and bright scales, without smell, with a bitter taste, slightly soluble in water; it decomposes slowly into salicylic acid and acetol, and its antiseptic effect is thus gradually developed. F. Ottolenghi (*Gazz. d. Osped.*, April 14, 1896, quoted in *Brit. Med. Journ. Epit.*, June 6, 1896) from his experiments concludes that it is one of the salicylic compounds best adapted for use as a topical application, inasmuch as (1) on contact with living human tissues it divides into its component elements, salicylic acid and acetol; (2) at the temperature of the human body it manifests its antiseptic action

without causing irritation; (3) it never produces toxic effects when applied locally. Comparing it with salol, he attributes the following advantages to salacetol: (1) Weight for weight, it contains a larger amount of salicylic acid; (2) it is more soluble, and its solubility increases at the temperature of the human body; (3) it does not, like salol, require prolonged persistence of contact (many hours) with the tissues to develop all the antiseptic energy which it possesses; (4) the products of its decomposition are never poisonous.

14. Salol.

Salol has been used in the treatment of diarrhoea by **M. H. Fussell** (*Therap. Gaz.*, August 15, 1896). Compared with resorcin and naphthalin he considers that salol is a better remedy; but he has found it so useful that he has not been tempted to use the other drug in its place, to any extent. He gives it in the following form:—

R	Salol	...	...	...	...	5i
	Bismuthi Subnitratis		...	...	...	5ii
	Misturæ Cretæ ad	...	...	...	...	5iii

Of this he gives 2 drachms every one or two hours until relief is obtained. He employs the subnitrate of bismuth because he considers that salol has a better effect when mixed with some inert powders than when given alone. When employed for diarrhœa due to dietetic errors, opium is rarely necessary after the use of salol, since the latter controls abdominal pain. He has found that it corrects the fœtor of stools, and that in the treatment of diarrhœa it is better than opium, as it does not cause subsequent constipation.

In the same number of the *Therap. Gaz.*, however, certain contra-indications to the use of salol are suggested. It was originally introduced because it had no irritant action on the stomach, since it is soluble only after entering the intestine ; but the large percentage of carbolic acid (40 per cent.) may make it unsafe, because it may possibly produce symptoms of carbolic acid intoxication.

Hesselbach says that it has a distinctly irritant action upon the kidneys, and hence cannot be employed with either acute or subacute forms of nephritis. Two cases, one fatal, of the production of toxic symptoms are quoted from the *University Medical Magazine* for April, 1896. In both the urine became darkened, and in one it was suppressed.

Manceau (*Thèse de Paris*, No. 159, 1896) also draws attention

to the need of caution when employing this drug internally in cases of fevers, in acute and chronic diseases of the kidney, and in arthritic cases.

15. Izal.

The antiseptic properties of izal have been studied by Professor Delépine (*Med. Chron.*, September, 1895). He concludes that when it is diluted with from 100 to 200 parts of water it is a powerful and reliable antiseptic. As an antiseptic it is more powerful than carbolic acid, and if it be remembered that it causes very little irritation of living tissues, that in moderate doses it is not poisonous, and that practically speaking it is not volatile, there can be little doubt as to the immense advantages it possesses. Izal can be freely administered internally, can be used over extensive wounds, or injected under the skin without bad effects, and it does not damage surgical instruments.

The pharmacology of izal has been investigated by Tunnicliffe (*Pharm. Journ.*, April 18, 1896). He finds that it is rapidly fatal to the tubifex rivulorum, and that when applied directly to the heart or muscle nerve preparation of the frog it exerts a marked action. When, however, it is administered through the medium of the circulating fluid, it is very much less active, but when given in relatively large doses, it destroys the functions of the spinal cord and medulla. When large doses are introduced into the stomach of mammals izal produces no local effects, but it passes down the alimentary canal, and some of it is contained in the fæces. It also gives evidence of its presence in the breath. With very large doses the central nervous system becomes affected; restlessness, incoördination and twitching of the limbs may be followed by paralysis, and perhaps death from paralysis of the muscles of respiration. From his experiments Tunnicliffe concludes that for its antiseptic properties izal may safely be given to adults in doses of from $\mathfrak{m}\mathfrak{xv}$ to \mathfrak{zj} , made into an ounce or half-ounce mixture, or diluted with water or milk, three or four times a day. He suggests that in the future it may be used as an intestinal antiseptic, comparable to guaiacol, salol, naphthol, etc., that it may perhaps act as an anthelmintic, and that, from its excretion by the pulmonary and bronchial mucous membrane, it will be of use in cases of fœtid bronchitis, bronchiectasis, etc., and perhaps also in phthisis. The entire absence of any depressing action on the heart, and of any disturbing influence on the digestive organs, favour the internal use of izal.

16. Sodium fluoride, or fluorol, is said to be a valuable antiseptic (*Pharm. Journ.*, January 11, 1896). In 1 per cent. or even half per cent. solution it acts as a powerful germicide.

It is especially useful in ophthalmic practice, since it does not provoke irritation or pain, and it has no caustic action.

17. Traumatol has been highly praised by Ladevie (*Allgem. Wien. med. Zeit.*, September 1 and 8, 1896) for its antiseptic and therapeutic powers. He contrasts it with iodoform as being absolutely harmless and non-irritating, both locally and generally. Internally its antiseptic action is, he considers, as potent as that of creosote or iodoform. He also claims for it a most favourable influence on the intractable diarrhœa of tuberculosis.

18. Formaldehyde as an antiseptic, according to F. C. J. Bird (*Pharm. Journ.*, August 1, 1896), theoretically should prove exceptionally valuable on account of its intense germicidal action, its non-poisonous nature, and its volatility. The vapour from 1 minim of formaldehyde solution appears to preserve an infusion for two or three days under the most adverse conditions, while that from 5 minims will keep it for a week or more.

In a later paper (*Pharm. Journ.*, September 26) he contributed a further study of the properties and uses of formaldehyde. Although it ranks high as a deodorant, the vapours given off are extremely irritating to the eyes and the mucous membrane of the nose and throat. As a preservative and as a disinfectant for rooms it is very thorough and effective, but when used for the latter purpose, the irritating nature of the fumes necessitates free ventilation.

II.—EXTERNAL APPLICATIONS.

19. Formalin gelatine has been prepared by Schröder (*Pharm. Zeitung*, No. 56, 1896) by adding to a warm solution of gelatine, in an equal quantity of water, 2 per cent. of formalin while stirring the liquid. A thick mass is thus formed, which is turned into a basin covered with formalin, and left for some time. After being powdered, the product is well washed with water and dried (*Pharm. Journ.*, July 25, 1896). It then forms a suitable, hard, resistant substance which cannot be dissolved by dry or moist heat, and is unaffected by organic and mineral acids, alkalies, or acid salts. It has been employed by Schleich (*Therap. Monat.*, February, 1896) as a powder over primary sutured wounds which healed by first intention without further dressings. As the formalin gelatine when heated can be bent or moulded into any required form, Schleich suggests its use in plastic surgery. It has been found that it is possible to modify its hardness, so that while insoluble in boiling water, soluble with

great difficulty in artificial gastric juice and bile, it is very easily dissolved by pancreatic juice, and it has therefore been proposed to use it for making capsules to contain drugs that are required to act on the small intestine.

20. Picric acid has by many observers (Delpech, Thiery, Filleul, Papazoglou, and D'Arcy Power) been recommended for the treatment of burns, and a form of picric acid cotton-wool has been prepared for this purpose by steeping absorbent cotton in a saturated solution of picric acid and drying. When dressing burns the wool is damped with water and applied wet, and covered with absorbent cotton-wool and a light linen bandage; the moist dressing is renewed from time to time. A solution of picric acid at once relieves the pain of a burn and promotes rapid healing. **D'Arcy Power** (*Brit. Med. Journ.*, September 12, 1896) says that picric acid limits the tendency to suppuration, since it coagulates the albuminous exudations and allows healing to proceed under a scab consisting of epithelial cells hardened by picric acid. The resulting cicatrix is also, he affirms, smooth and supple. He allows the first dressing to remain on three or four days, and the second is left on for a week.

21. Europhen (*Therap. Monat.*, November, 1895) has been recommended by **Saalfeld** as an iodoform substitute. It possesses a faint, saffron-like odour, and it contains 28·1 per cent. of iodine. It is permanent in the dry state, but on contact with water, and especially with alkaline fluids, it liberates small quantities of iodine, even at the ordinary temperatures. It is claimed for this substance that it is non-irritating and non-toxic. **Saalfeld** employs it together with lanoline and talc for intertrigo, and he states that it has special adhesive power, which is an advantage after scarification of acne pustules and nævi. Inasmuch as the odour is slight and the drug possesses no unpleasant after-effects, it may possibly be a valuable substitute for iodoform.

22. Celloidine.

Amongst local applications celloidine and gelanthum may be mentioned. Celloidine has been recommended by **R. T. Williamson** (*Brit. Med. Journ.*, April 18) as a permanent dry-coating for wounds. He states that it dries in a few minutes, and forms a coating which adheres for several days, and that it is preferable to collodion. The parts to which it is to be applied should be absolutely dried, and should be stretched slightly before using celloidine, so as to counteract the contraction that commonly occurs during drying. The solution employed consists of 2 parts of celloidine dissolved in a mixture of 15 parts of absolute alcohol and 15 parts of pure ether (sp. gr. ·720). If ether of

a higher specific gravity is used, it has been found that the collodine does not adhere to the skin so well.

23. Gelanthum, a new watery varnish, was introduced by Unna (*Brit. Med. Journ.*, October 17, 1896, where details of the mode of preparation are given). It consists essentially of a solution of gelatine mixed with tragacanth. It is claimed that it has the following advantages:—It may be better spread; it dries more rapidly and with a smoother surface; it feels more cooling on account of the greater amount of water it contains; it keeps drugs suspended, and distributes them more evenly on the skin; it may be combined with drugs either singly or in combination; it promotes the drying of hygroscopic drugs, such as ichthyol; it permits the addition of grease; and, if protected from drying, it may practically be kept for ever.

24. Creosote.

The external use of creosote in the treatment of malarial remittent fevers has been investigated by Surgeon-Lieutenant L. Rogers, I.M.S. (*Brit. Med. Journ.*, January 4, 1896), who rubbed 15-minim doses into the axilla in eight cases of severe intermittent fever when the temperature was from 103.2° to 104.4° Fahr. Perspiration ensued, and the temperature fell, while the severe headache was markedly relieved. In some of these cases, when not treated in this way, the temperature remained high for eight or more hours. He thinks that creosote will prove of great value in shortening and lessening the severity of the paroxysms of severe intermittent fevers, as its antipyretic and sudorific powers are greater than those of the ordinary diaphoretics, while it does not depress the heart or reduce the number of red corpuscles, like the antipyrin class of drugs.

III.—ASTRINGENTS.

25. Tannoform.

This is a condensation product of nut-gall tannin and formic aldehyde, which has been introduced by E. Merck. It is a reddish-white light powder, insoluble in water, but soluble in alkaline solutions. It may be regarded as methylene ditannin—



Tannoform has been found to be very useful in the treatment of various forms of skin disease, and it is quite harmless. It has the advantage of being tasteless, of not causing irritation of the buccal mucous membrane, of not being dissolved in the

stomach, and not irritating its mucous membrane, and of reaching the intestine without undergoing any change. **De Buck** and **De Moor** (*Belgique Médicale*, August 13, 1896) have used it with satisfactory results as an astringent and an intestinal antiseptic in infantile diarrhœa.

26. Tannalbin is yet another compound whose action is intended to be reserved for the lower part of the alimentary canal. It is said to be almost insoluble in the stomach, and slowly soluble in the intestine. It is an albuminate of tannin which contains 50 per cent. of tannic acid. It has been used by **Vierordt** (*Deut. med. Woch.*, June 18, 1896) in cases of subacute or chronic intestinal catarrh. The drug is tasteless, and can be given in doses of .5 to 1 gramme four times a day in water or milk.

27. Tannigen.

This substance has been employed in the treatment of infantile diarrhœa by **Moncorvo** (*Bull. de l'Acad. de Méd.*, December 3, 1895). It is a compound of tannin and diacetyl, which is insoluble in water or acids, but breaks up readily in an alkaline medium. It is only decomposed therefore in the duodenum, where it liberates tannin in the nascent condition. **Moncorvo** found that its action was generally prompt, certain, and effectual, both in acute and chronic diarrhœa. As it lost none of its power when given with antiseptics, such as salol or salicylate of bismuth, **Moncorvo** recommends its administration with these when the fermentation processes in the large intestine are very active. According to **A. Schneider** (*Merck's Report*, 1896), tannigen in a moist condition grows sticky even at the temperature of the body, and it is therefore advisable to mix it with some insoluble substance, and to give the powder in doses of from 2 to 16 grains in milk or wine three or four times a day.

28. Ichthyol (*Therap. Gaz.*, September 15, 1896) has been recommended in intestinal disorders, 4 or 5 grains a day being administered in keratin-coated pills, which are able to pass through the stomach undissolved. It is said that this remedy is best given some little time after meals, and it is curious to note that it appears to be almost equally useful in diarrhœa and rebellious constipation.

IV.—HÆMATINICS.

29. Ferratin.

Deutsch, in the *Wien. medicin. Blätter* for October 24, 1895, writes on the value of ferratin. He states that it contains 7 per cent. of iron, and in its relation to the proteids present

it is much like that ordinarily found in the liver. The amount of ferratin present in the liver varies with the state of enlargement of the organ, and it must be regarded as a reserve substance comparable to glycogen. In the treatment of chlorosis he has found that it acts as well as any other iron preparation, and he has observed the greatest benefit from it in cases of gastric ulcer. While it is useless in pernicious anæmia and allied affections, it is often of extreme value in secondary anæmia.

If Schmiedeberg's hypothesis that ferratin is absorbed unchanged and stored in the liver is correct, this case affords an exact converse to an experiment by Marfori. On bleeding a dog rapidly it was found that the liver was deprived of its ferratin. Deutsch thinks this remedy is at least as valuable as any other iron preparation, and it is the only one of which the physiological function and fate in the organism have been established both from the experimental and the clinical side.

The composition and the action of ferratin are by no means satisfactorily determined, since in Merck's Annual Report, March, 1896, authorities are quoted affirming the identity of ferratin with the iron combination of the liver, and also denying this fact, affirming that ferratin is a weak acid compound belonging to the iron albuminates, and is in its properties almost identical with the dialysed iron albuminates obtained by de Groot's method. It is stated that it is to be distinguished from hæmatogen by the fact that its iron is immediately extracted by alcohol acidified with hydrochloric acid. Further, although the absorption of ferratin is considered proved by certain authors, it has been denied by others; in fact, the only point that may be considered absolutely granted by all concerning ferratin is the presence of iron.

V.—ANÆSTHETICS.

30. Eucaine.

A new rival to cocaine was introduced recently under the name of eucaine. This is stated to act as a local anæsthetic, but to be less toxic, and to have no effect upon the pupil. Eucaine is a synthetic preparation whose proper designation is methyl-benzoyl-tetramethyl-oxypiperidine-carboxylic-acid-methyl-ester. The chemical composition of **eucaine** is treated at length by G. Merling (*Pharm. Journ.*, October 17, 1896), but the above designation would alone indicate that the subject is far too technical for useful reproduction in these pages.

Brudenell Carter has employed a 5 per cent. solution of the hydrochlorate in two cases, and he has found that while the

pupil is unaffected and reacts readily to light, the eyes are rendered sufficiently insensitive for operative measures. One advantage of this solution is that it may be sterilised by boiling without undergoing decomposition and without loss of active properties. It has been suggested that eucaine should be employed in dentistry and laryngology, and in both it has been used with satisfactory results.

Professor **Charteris**, of Glasgow (*Lancet*, August 15, 1896), has investigated the toxic influence of eucaine as compared with that of cocaine, and he concludes that the toxic dose is larger, and that the physiological effects do not follow nearly so rapidly as those which result from a similar dose of cocaine under identical conditions. He considers that the action of eucaine is slower in onset and less in intensity.

In dentistry, **Wolff**, of Berlin, has found (*Pharm. Journ.*, August 15, 1896) that 5 minims of a 10 per cent. solution suffice to relieve pain; larger doses may give rise to swelling of the gums. In only two cases, out of 128, were slight attacks of vertigo noted.

In the *Therap. Monat.* of July, 1896, **Görl** states that when eucaine is used to anæsthetise the vesical mucous membrane it causes slight smarting and rather abundant hæmaturia. This confirms previous observations, which indicate that eucaine produces hyperæmia at the seat of application, and suggests that the remedy should be used with caution when there is reason to fear hæmorrhage.

Berger (*Rev. de Thérap.*, June 15, 1896), from the clinical side, states that the drug is not so toxic as cocaine, while its anæsthetic effect is fully equal to it; but he states that, whereas cocaine produces local anæmia, eucaine produces local hyperæmia. A 1 per cent. solution applied to the eye causes no pain; a 2 per cent. solution causes some pricking. Anæsthesia occurs in a few minutes; the hyperæmia lasts for half-an-hour after the anæsthesia passes off. Notwithstanding the above favourable statements regarding eucaine, there is some reason to doubt whether, as a local anæsthetic, it is destined ultimately to replace cocaine. Some patients, when it has been used in laryngology, complain of a burning sensation which precedes the anæsthesia. Whether this can be counteracted in any way forms one of the problems upon which the future use of eucaine probably depends.

31. Ethyl Chloride.

The local application of ethyl chloride has been recommended in the treatment of hæmorrhage after teeth extraction. In one

case (*Lancet*, January 18, 1896) the hæmorrhage was arrested instantly by ethyl chloride after pressure and plugging with perchloride of iron had been resorted to without result. The local application of ethyl chloride over the nape of the neck has also been recommended in the treatment of hysterical aphonia (*Lancet*, January 18, 1896), a condition which, however, frequently yields to less painful modes of treatment.

32. Pental.

Prince Stallard (*Brit. Med. Journ.*, March 21, 1896), before the Society of Anæsthetists, read a careful and practical paper on the administration of pental as an anæsthetic. (See p. 172.)

VI.—HYPNOTICS.

33. Trional.

Scognamiglio has made use of this substance somewhat largely as a hypnotic, and he speaks favourably (*Rivista Clin. e Terap.*, No. 11, 1895) of its action in mania, melancholia, neuralgia, and even in the severe pains of tabes. It produces sound sleep in ten to fifteen minutes after it has been taken, and he has seen no bad effects upon the circulatory, respiratory, or digestive systems. He has made special study of its action upon the kidneys, as many observers have stated that it produced hæmatoporphyrinuria. This action he has been unable to confirm either clinically or experimentally, and he concludes that it is a powerful and safe hypnotic when given in doses of 1 to 2 grammes a day, and that its action is superior to that of sulphonal, chloral hydrate, or morphine, and that hæmatoporphyrinuria as a result is greatly exaggerated.

Gierlich, of Wiesbaden (*Sem. Méd.*, September 5, 1896), has recorded a curious case in which toxic symptoms arose during the administration of trional. The patient was a man aged forty-four, addicted to the use of morphine, and he suffered from sleeplessness, for which $1\frac{1}{2}$ gramme of trional was prescribed. After this dose had been taken for fifty-six days his gait became staggering, and there were some trembling movements of the limbs; the speech was slow and indistinct, and his memory was impaired. With the discontinuance of the trional, all these symptoms speedily passed away.

34. Pellotin.

Jolly (*Deutsch. med. Woch.*, June 11, 1896) has used this substance, which is stated to be an alkaloid, in forty cases, as a hypnotic. In most of the cases severe pain was present, but nevertheless 4·5 to 6 centigrammes produced a hypnotic effect.

A few patients complained of noises in the head and vertigo, but there were no other unpleasant symptoms. Pellotin can be administered either by the mouth or subcutaneously.

VII.—DIURETICS.

35. Theobromine.

At a meeting of the Société de Thérapeutique, Huchard gave his experience of theobromine, which, in the treatment of cardiac affections, has a diuretic action far superior to caffeine. The diuresis was produced earlier than with digitalis. Incidentally he expressed his condemnation of diuretin (sodium salicylate of theobromine), which might cause serious complications, and possessed toxic properties not to be ascribed to theobromine.

36. Diuretin.

The efficacy of diuretin has been approached from the clinical side by Louis Vintras (*Lancet*, April 25, 1896). He concludes that when the kidney disease is primary and well established—that is, when the deep parts of the organ are affected, as in the parenchymatous form of acute nephritis—and when there is much albumen present, diuretin is of little or no avail; while in those cases in which the kidney trouble is secondary to morbid lesions in other organs, and the epithelial layer of the urinary tubules is the seat of disease, this diuretic is a valuable therapeutic agent. These conclusions are apparently based upon five cases, only two of which did well. Before making such abrupt limitation of the value of diuretin, it would be well to compare the results obtained from a larger series of cases. It is well known that in acute renal affections diuretics, as a rule, do harm rather than good, and my recent experience of the use of diuretin (*Practitioner*, December, 1896) in a case of chronic kidney disease would encourage me to employ this drug still further in similar cases.

VIII.—RECENT REMEDIES UNCLASSIFIED.

Amongst the new candidates for favour may be mentioned airol, apolysin, formin, bromide of strontium, salicylate of strontium, and salicylate of theobromine. These have scarcely been before the profession long enough for the expression of any general opinion upon their uses, but in some quarters they have been credited with active powers.

37. Airol, which, according to Merck, is bismuth oxy-iodide-gallate, is another of the odourless, tasteless, and insoluble com-

pounds introduced as excellent substitutes for iodoform. It is generally sprinkled on wounds in the form of a powder.

38. Apolysin, according to the same authority, is monophenetidine citric acid, and is nearly allied to phenacetin, both in composition and action. As large doses have no unpleasant after-effect, while it has been said to act promptly as an antineuralgic and antipyretic, it may possibly to some extent replace phenacetin. From 8 to 24 grains may be given as a dose. It dissolves readily in hot water, also in glycerine and alcohol. *Jez* (*Wien. klin. Woch.*, May 28, 1896), while confirming the statements of others about the innocuousness of apolysin, seems to think that this is its chief merit. The antipyretic action he found to be very slight and slow; he thinks it possesses feeble diuretic powers, and in his hands it gave unsatisfactory results as an analgesic.

39. Formin (urotropine), whether as a solvent of uric acid or for the treatment of bacterial diseases of the urinary tract, obviously needs more extended observations before its place in medicine can be fixed.

40. Bromide of Strontium has been used in four cases of epilepsy (*Roche, Lancet*, September 26, 1896). None of these were cured, but all of them were much relieved. Other bromides had been employed before in all these cases, and the combination with strontium seemed to give better results. Roche has given 20 grains of bromide of strontium together with from 5 to 10 grains of bromide of ammonium or bromide of sodium, and this dose he has given night and morning, largely diluted. When this dose was insufficient to control the attacks, and when the patients did not complain of the remedy, he has increased the amount to 1 drachm given twice daily. He states that usually no depression follows its use, but acne of the face sometimes results, and this may be counteracted by the simultaneous administration of liquor arsenicalis.

41. Salicylate of Strontium has been used in 5-grain doses to exert an antiseptic action on the intestinal contents, and in larger doses (gr. x.—xvi.) it is stated to give good results in cases of gout and chronic rheumatism, especially when associated with indigestion.

42. Salicylate of Theobromine has been introduced by *Merck* to replace diuretin, to which many patients object on account of its sweetness. It is to be administered in the same way and for the same class of cases; but it has yet to establish a clinical reputation.

INDEX TO AUTHORS QUOTED.

- Abadie, 272, 376, 382
 Abbott, 182, 190
 Achard, 146
 Adler, 370
 Alfodi, 140
 Alger, 369
 Alix, 427
 Ambler, 36
 Anderson (of Blackpool), 437
 Anderson, McCall, 275
 Angerer, 194, 205
 Apfelstedt, 324
 Arcoleo, 391
 Arloing, 184
 Armstrong, 134
 Arnaud, 371
 Arnozan, 97
 Ascher, 381
 Aschoff, 50, 324
 Ashby, 160
 Ashurst, 300
 Askarazy, 119
 Attlee, 440
 Auerbach, 141
 Ausset, 140
 Axenfeld, 379
 Aymard, 154

 Baccelli, 50
 Bachus, 161
 Baldy, 301
 Baldwin, 36
 Balfour, 36
 Ballance, 182, 219
 Bannatyne, 132
 Bar, 347, 350
 Baracz, 201
 Barbour, 36
 Bardet, 24
 Barker, 423
 Baruch, 90
 Barwell, 235
 Bastianelle, 214
 Bates, 399
 Batten, 381
 Bauer, 1
 Baughman, 84
 Baumann, 204
 Baumlér, 1
 Baxall, 132

 Beale, 37
 Beatson, 209
 Beck, 185
 Beckmann, 415
 Belfanti, 411
 Belugou, 79
 Bender, 277
 Benson, 428
 Berger, 71, 462
 Berliner, 364
 Berman, 414
 Bernutz, 286
 Berthier, 427
 Besnier, 358
 Betts, 410
 Beuttner, 235, 311
 Beyer, 71
 Bezold, 397
 Birr, 360
 Bigami, 147, 423
 Bilhaut, 322
 Binz, 450
 Bird, 457
 Blair, 390
 Blin, 430
 Bloch, 253
 Blum, 450
 Boeck, 275
 Boissard, 159
 Bôrgér, 448
 Borger, 146
 Bosworth, 409
 Botey, 420
 Boudeau, 72
 Bouilly, 295
 Bowles, 13
 Boyd, M. A., 126
 Boyd, Stanley, 430
 Bradbury, 20
 Bradford, 231
 Bramwell, 6
 Branthomme, 360
 Brault, 366, 371
 Breslauer, 70
 Briau, 202
 Brindeau, 351
 Briquet, 276
 Broadbent, J., 13
 Broadbent, Sir W., 17
 Broca, 232, 415
 Brocchieri, 358
 Brockbank, 94

 Brocq, 423
 Brodhurst, 232, 235
 Bronner, 400
 Brouovski, 102
 Brown, Dillon, 161
 Brown, Moreau, 410
 Browne, Lennox, 408, 418
 Browne, R., 19
 Bruce, 67, 69, 424
 Bruni, 190, 191
 Buss, (9, 205
 Brunton, Dunbar, 451
 Brush, 68
 Buchmann, 318
 Budin, 149, 347
 Bull, 65
 Bullock, 349
 Pulstrode, 437
 Burckhardt, 367
 Burnham, 378
 Burrell, 201
 Buss, 348
 Butin, 347
 Buttar, 160

 Cabot, 205, 257, 259
 Calliano, 443
 Calomenopoulo, 454
 Cameron, 354
 Campana, 358
 Campbell, 77
 Campbell, H., 15
 Campbell, J., 266
 Campbell, Johnstone, 150
 Capellen, 199
 Carasquilla, 371
 Carless, 89, 215
 Carter, Brudenell, 461
 Caruccio, 358
 Casoute, 111
 Cathcart, 88, 153
 Caton, 1
 Cattaneo, 33
 Caussin, 235
 Cautley, 159
 Cerna, 173
 Cestan, 286, 289

 Chantemesse, 142, 146, 181
 Chaput, 220
 Charpentier, 347
 Charrin, 347
 Charteris, 462
 Chauffard, 26, 110, 133
 Chaumier, 415
 Chavasse, 217
 Cheadle, 129
 Cheyne, 207, 263
 Chibret, 377, 383
 Cholmogoroff, 343
 Christopher, 161
 Chvostek, 131
 Clar, 420
 Claverie, 342
 Clubbe, 248
 Cohn, 33
 Coleman, 348
 Coley, 182, 183, 358
 Coolet, 116
 Copeman, 433
 Corning, 166
 Cory, 319
 Cotterell, 217
 Courmont, 145, 184
 Cripps, 216
 Crook, 161
 Crosby, 19
 Cullingworth, 341
 Curtis, 183

 Da Costa, 453
 Dalby, 415
 Dane, 227
 Daniels, 166
 Darenberg, 37
 Darier, 378, 379
 D'Arsonval, 262
 Dauchez, 161
 Davidson, 375
 Davie, 202
 Davis, P., 319
 Davoren, 430
 De Buck, 372, 460
 Defries, 431
 De Hart, 170
 Delavan, 420
 Delepine, 456
 Della Vedova, 411

Delore, 250, 292
 Deluca, 371
 Demichieri, 389
 De Minicis, 142
 De Moor, 372, 460
 Deniges, 199
 Denison, 36
 Derville, 359
 Deschamps, 378
 Descouleurs, 367
 De Seigneux, 353
 Deutsch, 460
 Devie, 112
 Dickenson, 112
 Dieulafoy, 92, 223, 250
 Dmochowski, 412
 Dobell, 59
 Dobrowsky, 372
 Dor, 383
 Doran, 307, 329
 Dostal, 109
 Doyen, 196
 Dräer, 143
 Dreser, 172
 Driver, 391
 Dubarry, 382
 Dubreilh, 181
 Du Cazal, 108
 Duhring, 361
 Dujardin-Beaumont, 102
 Duncan, 314
 Dunlop, 121
 Dunlop, 90
 Dunn, 82
 Duret, 214

Earle, 268
 Ebersson, 374
 Eccles, 18
 Edebohls, 1211
 Edelheit, 40
 Eden, 307, 325, 330
 Edes, 206
 Edmunds, 219
 Eichhorst, 50
 Eiselsberg, 222
 Eisendraht, 168
 Elder, 170
 Elser, 434
 Emmerich, 184, 358
 Erb, 78
 Erbmann, 45
 Eröss, 162
 Escherich, 92, 161
 Estes, 169
 Eustache, 310

Fodor, 109
 Fordyce, 361
 Forissier, 235
 Förster, 310
 Fothergill, 328
 Fougerey, 395, 414
 Fournier, 271, 411
 Fox, Fortescue, 133
 Fox, R., 417
 Fraenkel, 78, 324, 412
 Frank, 370
 Franke, 214
 Freeman, 155
 Frenkel, 106
 Freudenthal, 413
 Freund, 310
 Frey, 370
 Freyer, 256, 433
 Freyhan, 62
 Fritsch, 343
 Fuller, 260, 279, 280
 Fürbringer, 63, 64, 65, 198
 Fussell, 455

Gaibissi, 64, 245
 Galezowski, 378, 387
 Galloway, 373
 Garrod, 127, 452
 Gaucher, 373
 Gaulard, 346, 347
 Gayet, 207
 Germann, 409
 Gerster, 183, 265
 Giampietro, 40
 Gibbons, 423
 Gibbons, R. A., 104, 253
 Gibney, 230
 Gierlich, 463
 Giles, 331
 Gillespie, 109
 Giordani, 215
 Giraud, 146
 Gleitsmann, 166
 Godlee, 203
 Goedel, 130
 Goldberg, 278
 Golding-Bird, 81, 216
 Goldscheider, 62, 64
 Goldstein, 140
 Goldthwait, 230, 231
 Gomez, 362
 Goodall, 435
 Görl, 462
 Gottschalk, 304, 325
 Goubanoff, 284
 Gouvea, 378, 389
 Gradenigo, 411
 Graefe, 388
 Grant, 394
 Gratiot, 140
 Greene, 276
 Griffith, 317
 Groslik, 261
 Gross, 246
 Grosz, 366

Grube, 113, 116
 Guerard, 344
 Guiccardi, 73
 Gulland, 119
 Haffkine, 434
 Haig, 131
 Hajek, 420
 Haldane, 442
 Halderman, 140
 Hall, 77, 408, 446
 Hallopeau, 272, 358, 359
 Halsted, 165
 Hamburg, 158
 Handfield-Jones, 332, 339
 Hanot, 110
 Hardie, 341
 Harley, 86
 Harris, 37
 Harris, Thos., 43
 Harrison, 108, 255
 Haward, 84
 Hayward, 160
 Heath, 267
 Heidenhain, 202, 264
 Heineman, 10
 Hennicke, 172
 Hennig, 142
 Héricourt, 184
 Herman, 76
 Gayet, 17
 Herringham, 18
 Herschell, 18
 Herxheimer, 370
 Heryng, 403
 Hesselbach, 455
 Heubner, 64
 Heurtaux, 201
 Heusner, 371
 Hirschberg, 388, 429
 Hoffa, 233
 Hofmeier, 312
 Hollis, 83
 Holt, 140
 Hoor, 374
 Hotchkiss, 83, 147
 Howell, 201
 Howland, 279
 Howlett, 74
 Hubbard, 419
 Huchard, 23, 24, 108, 118, 464
 Hufschmid, 201
 Hughes, 225, 235
 Hugounenq, 112
 Hyde, 280

Jaboulay, 202
 Jackson (of Boston), 181, 184
 Jackson, E., 375
 Jacobi, 103, 104, 199
 Jacoby, 62, 63, 64, 245
 Jadassohn, 278
 Jaksch, 109

Janet, 261
 Javal, 390
 Jendritza, 172
 Jez, 465
 Joachim, 70
 Joal, 419
 Jocqs, 378
 Johannessen, 141
 Johnson, Raymond, 244
 Johnson - Paterson, 387
 Jolly, 69, 463
 Jona, 184
 Jones, H. E., 394
 Jones, R., 268
 Josias, 148
 Jullien, 367

Kader, 217
 Kaltenbach, 310
 Kanthack, 307, 326, 437
 Kast, 448
 Kebler, 442
 Keefe, 168
 Keen, 195, 254
 Keilmann, 159
 Keith, 81
 Kélaidités, 148
 Kelly, H. A., 254
 Kelly, Howard, 297
 Kennedy, 345
 Kiesel, 166
 Kiewicz, 384
 Kiliani, 199
 Kingscote, 19
 Kirchner, 436
 Kirmisson, 225
 Kitasato, 435
 Klebs, 310
 Klein, 434, 437
 Kleinwächter, 310, 312, 313
 Klemperer, 122, 124
 Klotz, 285
 Knapp, 396
 Kocher, 206
 Kolisch, 109, 124
 Kopfstein, 184, 200
 Kossman, 286
 Kouwer, 215
 Krause, 36, 195
 Krauss, 77
 Krebs, 418
 Kussmaul, 112
 Küstner, 282

Labl é, 163
 Lack, 413
 Ladevie, 457
 Lafan, 117
 Lancereaux, 108
 Landau, 170
 Landerer, 165
 Landolt, 390
 Lane, Arbuthnot, 209

- Lane, Ernest, 273
 Lapeyre, 235
 Lassar, 362
 Laurens, 403
 Laveran, 252
 Lawford, 380
 Lecorché, 112
 Le Dentu, 184, 251, 252
 Leech, 453
 Le Filliatre, 142
 Legrain, 360
 Leith, 6, 17
 Lejars, 183
 Lemaistre, 163
 Lemoine, 148
 Lenhartz, 64, 66, 198
 Lépine, 52, 112
 Letulle, 111
 Lewin, 172, 277
 Lewis, 165, 258
 Lichtheim, 63, 64, 198
 Linke, 72
 Linkenheld, 411
 Lisère, 114
 Llewellyn, 74
 Lockwood, 242
 Lorenz, 232
 Loup, 166
 Lovett, 227
 Lowson, 48
 Luc, 397, 401, 412
 Lucas - Championnière, 188
 Luciani, 374
 Ludwig, 429
 Luff, 439, 449
 Luhrs, 222
 Lui, 73
 Lund, 165

 Macan, 285
 Macdougall, 222
 Macintyre, 405
 Mackenzie (of Burnley), 177
 Mackenzie, Hector, 59
 Mackenzie, Hunter, 419
 MacLagan, 130
 Maclaren, Roderick, 237
 Makins, 190
 Malcolm, 307
 Malgat, 378
 Manceau, 455
 Manley, 193
 Mapother, 454
 Maragliano, 32, 35
 Marchand, 325
 Marchant, Gérard, 196
 Marfan, 162
 Marmorek, 147, 181
 Marsh, E. J., 128
 Marshall, 423

 Martin, 231
 Mason (of New York), 193
 Massei, 419
 Massey, 301
 Mathews, 267
 Mathieu, 89
 Maude, 25, 206
 Mauriac, 280
 Maxwell, 390
 Mayer, 310
 Maynard, 449
 McDonald, 117
 McDowall, 77
 McEwan (of Dundee), 257
 McFarlane, 414
 McKerron, 348, 353
 Mendelsohn, 119
 Mensinga, 343
 Merck, 459, 464, 465
 Merklen, 424
 Merling, 461
 Metzgerott, 420
 Meyer, 227, 391
 Meyer, Willy, 224
 Mikhalkine, 77
 Mikulicz, 233, 241
 Milligan, 397, 403
 Minkowski, 112
 Missale, 126
 Moëller, 278
 Moizard, 140, 410
 Moncorvo, 72, 160, 460
 Montgomery, 280
 Moore, 206, 227
 Moosé, 111
 Mordhurst, 126
 Morel-Lavallée, 272
 Morison, A., 2, 6, 13
 Morison, Rutherford, 307
 Morris, Malcolm, 186
 Morris (of New York), 212, 223
 Morrison, 170
 Morrow, 361
 Morton, 189, 217
 Morton, C. A., 338
 Morton (of Bristol), 222
 Morton, R. A., 418
 Moty, 358
 Moure, 415, 419
 Müller, 330
 Murphy, 219
 Murrell, 162, 452

 Nancrede, 193
 Nash, 251
 Navratil, 419
 Nettlehip, 384
 Neudörfer, 170
 Neumann, 280
 Neumann, J., 323
 Newman, D., 420

 Newsholme, 129
 Nicati, 377
 Noble, 337
 Noorden, 122
 Norsa, 391
 Nothnagel, 367

 Obalinski, 222
 Oehme, 388
 Openshaw, 232
 Oppenheim, 79
 Osler, 95
 Ostankow, 79
 Oswald, 76
 Ottolenghi, 451
 Oudin, 163
 Owen, D., 24
 Owen, E., 189, 242

 Paget, S., 47, 203
 Papiewski, 159
 Parinaud, 382
 Parsons, 191
 Parvin, 170, 300
 Paschkis, 366
 Paul-Boncour, 191
 Pavone, 258
 Pechdo, 378
 Percival, 381
 Pergus, 388
 Peters, 367
 Petruschky, 36
 Peyma, 107
 Pflüger, 381
 Pfuhl, 434
 Phear, 95
 Phillips, 362
 Phocas, 235
 Picard, 64
 Pierri, 230
 Pilcher, 186
 Pinard, 317, 318, 341
 Pincus, Ludwig, 241
 Pinkuss, A., 308
 Plehn, 425
 Poirier, 196
 Politzer, 400
 Polk, 283, 299
 Pollard, 241
 Pollak, 404
 Poncet, 169
 Poore, 15, 60
 Popper, 159
 Portalier, 270
 Possaner, 387
 Potet, 356
 Power, D'Arcy, 178, 458
 Pozzi, 180, 282
 Preuschen, 310
 Price, 83
 Price, J., 301
 Price, M., 301
 Priestley, 87, 150
 Pritchard, 402
 Proksch, 280
 Purdon, 372

 Quennec, 426
 Quenu, 263
 Quinke, 54, 61, 62, 63, 64, 66

 Rabbas, 72
 Rachlmann, 338
 Ramond, 133
 Ramsay, 210
 Ransome, 42
 Reale, 90
 Reck, 434
 Reclus, 165, 203
 Regnier, 34
 Reinhold, 68
 Reinicke, 71
 Oudin, 163
 Remfry, 319
 Renan, 350
 Renaut, 162
 Rendu, 146
 Renzi, 32
 Reuss, 391
 Rice, 418
 Richet, 184
 Riedel, 96
 Rieken, 63, 65, 66, 199
 Ringer, 95, 115
 Ritchie, 336
 Rives, 8
 Riviere, 205
 Rixford, 81
 Robertson, 69, 91, 115
 Robertson, Argyll, 429
 Robinson, Byron, 315
 Robinson, G. D., 350
 Robson, 80, 214, 219
 Roche, 465
 Rochier, 169
 Rochon, 274
 Roger, 358
 Rogers, 459
 Rogue, 112
 Rokitansky, 310
 Rolleston, 84, 94
 Roosa, 383
 Rose, 428
 Rosenberg, 140, 170
 Rosenstein, 104
 Ross, 423
 Rossbach, 367
 Routh, 310
 Roux, 434
 Rowland, 405
 Royer, 347
 Ruault, 408
 Ruge, 303
 Rydygier, 249

 Saalfeld, 458
 Sabouraud, 366
 Sabrazes, 199
 Sacharbekoff, 153
 Saemisch, 429
 Sainsbury, 52
 Sallard, 446

- Salter, 364
 Salva, 409
 Samelsohn, 388
 Sanctis, 372
 Sänger, 301, 325
 Sarubin, 372
 Saundby, 6
 Savage, 75
 Savill, 368
 Sayre, L. A., 225
 Sayre, R. H., 225
 Sbrana, 74
 Scanzoni, 310
 Schech, 413
 Schede, 233
 Schilling, 172
 Schiperowitsch, 105
 Schleich, 164, 457
 Schmoll, 125
 Schneider, 460
 Scholl, 184, 358
 Schott, T., 21
 Schröder, 457
 Schüller, 133
 Schutz, 361
 Schwartz, 231
 Schwyzer, 140
 Scognamiglio, 71, 463
 Seagrave, 77
 Seebert, 140
 Ségond, 288
 Seiler, 414
 Semon, 421
 Senator, 64
 Senn, 183
 Sherman, 169
 Sheild, 400
 Sibley, 135
 Sicherer, 379
 Siefert, 163
 Silk, 167
 Simon, 101
 Simpson, 81
 Sinclair, 338
 Singer, 130
 Sircar, 428
 Smith, F. J., 55
 Smith, Noble, 188
 Smith, W. G., 372
 Spencer, Herbert, 307, 325, 330
 Spencer, W. S., 351
 Spitzer, 71
 Stabel, 205
 Stadelmann, 63, 65, 112, 193
 Stallard, 172, 463
 Starr, 206
 Steer, 74
 Stein, Conrad, 45
 Stein, H., 86
 Stevens, 390
 Stevens, T. G., 317
 Stewart, Hunter, 152, 154
 Steward, Sir T. G., 4
 Stiles, Harold, 238
 Stillier, 95
 Stimson, 183
 Stokes (of Dublin), 192
 Storbeck, 78
 Stoukovenkoff, 273
 Strassmann, 283
 Suker, 374
 Surveyor, 86
 Sutton, Bland, 307, 329
 Swayne, 321
 Swinburne, 277
 Symonds, 209
 Tait, Lawson, 287
 Talamon, 98
 Tanturri, 367
 Tardieu, 286
 Taty, 73
 Taylor, 280
 Teissier, 106
 Terrier, 421
 Terson, 383
 Thalinger, 310
 Thibierge, 358
 Thiemich, 159
 Thierry, 178
 Thin, 423, 425, 451
 Thomson, 69
 Thomson, W. H., 26
 Thorn, 310
 Thorne, Bezly, 6, 13, 14, 16
 Thorne, L. Thorne, 12, 14
 Thresh, 434
 Tilé, 368
 Tillaux, 310
 Tilley, 418
 Tissier, 347, 411
 Tobiesen, 66
 Todd, 25
 Toti, 419
 Trevelyan, 185
 Treves, 55, 93, 213
 Trousseau, 376, 378, 384, 387
 Truc, 386
 Trudeau, 36
 Truka, 388
 Tubby, 230, 233, 235
 Tuffier, 48, 191
 Tunncliffe, 456
 Turck, 410
 Turner, 66, 199
 Tweedy, 106
 Uhthoff, 379
 Unna, 373, 459
 Vacher, 381, 383
 Veiel, 372
 Veillard, 386
 Veit, 107, 304, 310
 Verneuil, 424
 Vierordt, 460
 Vignes, 379
 Vinay, 348
 Vinci, 166
 Vintras, 464
 Virchow, 310
 Vissman, 123
 Voigt, 433
 Volland, 49
 Vulliet, 215
 Vutchetitch, 450
 Wade, 130, 410, 416
 Waggett, 405
 Wagner, 412
 Wakeling, 348
 Walsh, 92
 Walsham, 227, 235
 Wannemaeker, 368
 Washburn, 107
 Waterhouse, 191
 Watson, 409
 Webster, 307, 327
 Wecker, 378
 Weigel, 230
 Weinrich, 447
 Weintraud, 125
 Weir, 260
 Weiss, 448
 Weiss, Julius, 131
 Wenzel, 449
 West, 50, 113
 Wethered, 13
 White, 423
 White, Faulder, 393
 White, Hale, 81
 White, J. C., 361
 White, J. W., 416
 White, Sinclair, 403
 Whitman, 227
 Wicherkiewicz, 383
 Widal, 144, 145, 191
 Wiggin, 88 219, 220, 248
 Wild, 452
 Wilkinson, 409
 Williams, P. W., 15
 Williams, Whitridge, 305, 322, 325
 Williamson, 117, 458
 Wohlmann, 132
 Wolfe, 72
 Wolff, 462
 Wölfler, 216, 218
 Wolters, 369
 Woltersdorf, 360
 Woodhead, Sims, 152
 Wordemann, 378
 Worthington, 74
 Wright, 364, 443
 Yeo, 127
 Yersin, 425
 Yerwant, 415
 Zahrzewski, 22
 Ziem, 412
 Zweigbaum, 309

INDEX TO SUBJECTS.

	PAGE		PAGE
Abdomen, Surgery of	210	Animal extracts in insanity	68
Abdominal section in treatment of		Anticholera inoculations	434
Glénard's disease	93	Antidiabetic remedies, Action of, on	
—, Formations of adhesions		phlorizin glycosuria	116
after	315	Antidiphtheria serum given by the	
Abscess of lung, Treatment of, 53;		mouth, Efficacy of	142
surgical treatment of, 204		Antifebrin, <i>see</i> Acetanilide	
—, temporo-sphenoidal, Trephining		Antiphthisis in pulmonary tuber-	
for	403	culosis	36
Acetanilide poisoning	441	Antisepsis, Intestinal	85
Acetonæmia and diabetic coma ...	111	—, —, in Graves's disease... ..	26
Acromegaly, Thyroid extract in ...	69	Antiseptics	454
Actinomycosis, Treatment of... ..	186	—, Intestinal, 86; in gastro-intes-	
Addison's disease, Treatment of ...	95	tinal diseases, 160	
Adonis vernalis in epilepsy	73	Antistreptococcal inoculations ...	434
Air and food passages, Foreign bodies		Antistreptococcic serum in scarlet	
in	415	fever, 148; in infective conditions,	
Airol in eczema, 372; as a substitute		180; in puerperal septicæmia, 345	
for iodoform, 464		Antitoxin of diphtheria, Action of,	
Albuminous expectoration after para-		upon the kidneys, 123; dangers	
centesis	50	of, 140; secondary effects of, 141;	
Albuminuria, 97; prognosis in, 97;		summary of conclusions, 143;	
cyclical, 98; reni-puncture in, 255		enemata of, 142; its effects in	
—, functional, Treatment of ...	101	diphtheria, 136, 236, 445; in	
Albuminuric retinitis, Duration of life		ozæna, 411	
after appearance of	387	— of syphilis	275
Albumosuria in chronic kidney		— of tetanus in tetanus	74, 184
disease	109	Aortic valvular disease, Treatment of	2
Alcohol in pulmonary tuberculosis,		Apolysin as an antineuralgic and anti-	
41; its effect on eczema, 361		pyretic	465
Alkaline waters in gout	127	Appendages, uterine, Surgical treat-	
Alloxuric substances, Excretion of, in		ment of suppuration of	299
gout	124	Appendicitis	92, 222, 249
Amaurosis after hæmorrhage, 388;		Appendix, Acute inflammation of ...	249
quinine in, 389		Arctic expeditions, Health of... ..	436
Ambulatory treatment of fractures ...	186	Argonin in gonorrhœa	277
American Pediatric Society's inquiry		Arsenic in local treatment of lupus	
as to antitoxin treatment of diph-		erythematosus, 361; in mycosis	
theria	136	fungoides, 369	
Anæmia, Disinfection of throat in ...	410	Arterial wounds, Suture of	202
Anæsthesia, General, 167; treatment		Artery, external iliac, Transperitoneal	
of after-effects of, 172		ligature of	202
—, Local	164	—, innominate, Ligature of... ..	201
Anæsthetic, Choice of	167	—, vertebral, Ligature of	201
Anæsthetics	164, 461	Arthritis, Rheumatoid, 124; treat-	
—, Local, in ear disease	403	ment of, 132	
—, Mixed	169	Aseptic wounds, Treatment of, with-	
Analgene in malarial fever	428	out bandages or dressings	177
Aneurysms treated by extirpation ...	200	Astringents	459
Angina pectoris, Nauheim baths and		Atropine as a preventive of fatalities	
exercise in, 7; nitro-glycerine		from chloroform	443
in, 21		Autoscopy, Direct, of larynx and	
Anginas, Treatment of	417	trachea... ..	403

	PAGE
Bacillus of Loeffler in diphtheria ...	142
— prodigious, Toxins of, in treatment of syphilis ...	276
Bacteriuria, Treatment of ...	119
Balsam of Peru in scabies ...	367
Baths and exercises in the treatment of heart failure ...	4
—, Nauheim, in heart failure, 5; in functional heart disease, 6; in organic disease, 6; in simple angina pectoris and Graves's disease, 7	
Bechterew's treatment of epilepsy ...	73
Betanaphthol and bismuth subnitrate as intestinal antiseptics ...	86
Bezold's mastoiditis ...	401
Bichloride of mercury in treatment of guinea-worm ...	430
Bier's treatment in cutaneous tuberculosis ...	360
Bile ducts, Primary carcinoma of ...	94
Biliary cirrhosis, Infantile, of Calcutta ...	428
Bilious hæmoglobinuric fever, Treatment of... ..	425
Bismuth, Salts of, in treatment of gastric and intestinal affections...	89
— subnitrate and betanaphthol as intestinal antiseptics ...	86
Blackwater fever, <i>see</i> Hæmoglobinuria	
Bladder, Treatment of large calculi in ...	256
Blood, Uric acid in, in nephritis, 109; lavage of the, 179	
Bobbin, Mayo Robson's... ..	219
Bone, Decalcified, for restoration of os calcis ...	191
— lesions, Post-typhoid ...	190
Boracic gauze in middle-ear suppuration ...	395
Breast, Treatment of cancer of, 207; treatment of inoperable cancer of, by cophorectomy and thyroid extract, 209	
Breasts, inflamed, Treatment of ...	351
Bromide of ethyl ...	172
— of potassium poisoning ...	440
— of strontium in epilepsy ...	465
Bromidrosis and hyperidrosis, Tanniform in... ..	370
Bromoform in whooping-cough, 162; its toxic effects and their treatment, 448	
Bronchiectasis, Treatment of ...	53, 59
Bronchitis, Acute, in children, 131; surgical treatment of, 203; treatment of, 419	
"Bronze diabetes" ...	110
Bukonic plague ...	435
Burns, Picric acid as a dressing for ...	178, 458
Button, anastomotic, Murphy's, 219; Chaput's, 220	
Cade-oil collodion... ..	373
Cæcal appendix, Acute inflammation of ...	240

	PAGE
Calcaneum, Restoration of, after caries	191
Calcium chloride in urticaria, 363; in pruritus, 368	
Calculi in bladder, Treatment of ...	256
Calcutta, Infantile biliary cirrhosis of	428
Calomel in early stages of pulmonary tuberculosis, 40; intramuscular injections of, in syphilis, 270	
Camphorated naphthol in lupus ...	358
Cancer of pylorus, Pylorectomy for, 81; of the head of the pancreas, 95; objects and limits of operations for, 263; of the rectum, operative treatment for, 263; modern operative treatment of, 265; of the pregnant uterus, 337	
Cannabis indica poisoning ...	440
Cantharides in relation to kidney disease	108
Cantharidinate of potassium in cutaneous tuberculosis	360
Capsules, Supra-renal, in Addison's disease	95
Carbolised gelatine ovoids in ear disease	404
Carbon-monoxide poisoning in colliery explosions	443
Carcinoma of the bile ducts	94
— mammæ, Treatment of	207
Cardiac disease, <i>see</i> Heart	
— failure	4
— medication	20
— tonic, Spermin as a	22
— and renal disease, Theobromine as a diuretic in	23, 118
Cardio-vascular affections, Thyroid medication in	23
Castration for enlarged prostate ...	257
Catarrh, Nasal	413
— of pharynx and larynx, Treatment of	418
— of stomach, Lavage in	90
—, Suppurative nasal, in children ...	415
Catheters, Sterilisation of	261
Celloidine as a permanent dry coating for wounds	458
Cerebrin in insanity	69
Charcoal as a therapeutic agent ...	452
Children, Medical diseases of, 149; surgical diseases of, 236; kidney colic in, 253; weight and development of prematurely born, 356; suppurative nasal catarrh in, 415	
Chloroform and oxygen	170
— collapse, Arterial bleeding in ...	443
— inhaler, A modified	171
— water in hæmoglobinuric fever ...	427
Cholera	432
Chorio-deciduoma malignum	304
Chorioma malignum	324
Choroiditis treated with iodine ...	379
Chromic acid in intertrigo	371
Chrysarobin and chrysophanic acid, Comparison between	372
Chrysophanic acid not a substitute for chrysarobin	372
Cinnamic acid in pulmonary tuberculosis	41

	PAGE		PAGE
Circulation, Diseases of the Heart and	1	antitoxin treatment, 139; bacillus of Loeffler in, 142; summary of conclusions, 143; injection of saline fluids in, 180; in treatment of ozæna, 411	
Cirrhosis, Infantile biliary, of Calcutta	428	Diphtheria antitoxin, <i>see</i> Antitoxin	
Clamp forceps for suturing excised hæmorrhoids	268	—, post-scarlatinal	435
Climbing treatment in heart failure	5	Diseases of the heart and circulation	1
Club-foot, Congenital, Treatment of	225	— of children, medical and surgical (Ashby and Wright)	236
Cocaine in neuralgia, 77; in affections of the throat and nose, 408; its toxic effects and their treatment	446	Disinfection and disinfectants	433
— habit	447	Dislocation of hip, congenital, Treatment of	232
Cœliotomy for <i>post-partum</i> accidents due to ventrifixation	314	Diuretic action, of theobromine in cardiac and renal diseases, 23, 118; of lithium salts, 119	
Colic, Renal, in children, 104; treatment of	105	Diuretics	464
Colitis, Membranous	81	—, Alkaline, in pruritus	369
Colliery explosions, Death in	442	— in kidney disease	118
Colon, Diseases of the, 83; chronic dilatation of	84	Diuretin	23, 118
Colpotomy for pelvic hæmatocele	291	— Knoll	119
Coma, Diabetic, and acetonæmia, 111; injections of saline fluids in	180	—, Therapeutic properties of	464
Concretions, uric-acid, Treatment of	122	Drainage, abdominal, Methods of	211
Congestive treatment of cutaneous tuberculosis wart	360	Drugs, Special	36
Coppered peas	442	—, Treatment of bacteriuria by the internal administration of	119
Corneal ulcers, Treatment of	379	Duodenal ulcer, perforated, Suture of	82
Coryza, hereditary syphilitic, Treatment of	411	Dying declarations	444
Counter-irritation in acute endocarditis	1	Dyspepsia, Lavage in	90
Creasote, in pulmonary tuberculosis, 36; external use of, in malarial fever, 459			
Cryptoscope, The, in surgery	175	Ear disease, Local anæsthetics in	403
Cysts of the vagina	309	—, Diseases of	393
—, hydatid, of lung, Treatment of	204	—, middle, Chronic suppurative disease of	393
		—, —, Treatment of polypi and granulations of	402
Death, Signs of	438	Eclampsia, Treatment of	106
Debility, general, Disinfection of throat in	410	Ectopic pregnancy, statistics of treatment	291
Deciduoma malignum	303, 321	Eczema, Treatment of, 361; airol in, 372	
Declarations, Dying	444	Electricity in treatment of squint, 390; in inflammatory affections of the eye, 391	
Deformities of the lower limb, Treatment of	231	Electrisation of medulla oblongata in diabetes insipidus	115
Delivery, Artificial, after maternal death	342	Emetine in dysentery	92
—, Mechanism of, 353; operative	341	Endocarditis, acute, Treatment of	1
Diabetes insipidus treated by electrification of medulla oblongata	115	Endometritis	308
— mellitus, 110; uranium nitrate in, 113; lime salts in, 113; treatment of, by injections of pancreatic extract, 114; associated with psoriasis, 116. <i>See also</i> Glycosuria		Enemata of antitoxin serum	142
— and diseases of kidneys	97	Enteric fever, <i>see</i> Typhoid	
Diabetic coma and acetonæmia, 111; injections of saline fluids in, 180		Enteroptosis, <i>see</i> Glénard's disease	
— blood, Method of distinguishing, from non-diabetic	117	Ephedrene hydrochlorate as a mydriatic	374
Diabetics, Food for	115	Epididymis in insanity	69
Diarrhœa, Copious injections in, 161; salol in, 455; tannoform in, 460; tannigen in, 460; ichthyol in, 460		Epilepsy, Treatment of, 72; cured by treatment of eye, 387	
Diet, its effect on eczema	361	—, focal, Surgical treatment of	192
Diphtheria, Antitoxin treatment of, 136, 236; complications of, after		Epithelioma of larynx, Treatment of	420
		Ergot in hæmoglobinuric fever	427
		Erysipelas, Antistreptococcic serum in	180
		— toxins in malignant disease, 182; in syphilis, 276; in lupus, 358	
		Erythrol tetranitrate in heart disease	21
		Eserine in subconjunctival hæmorrhage	378
		Ethyl, Bromide of	172

	PAGE
Ethyl chloride as a local anæsthetic	462
Ethyl diamin-silver-phosphate as a disinfectant for the eye ...	374
Eucaïne as a local anæsthetic, 166, 461; as a local anæsthetic in ear disease, 404; in affections of the throat and nose, 409	
Eupher as a substitute for iodoform	458
Exanthemata, Injections of blood serum in ...	148
Exclusion, Intestinal ...	221
Exercise and food in pulmonary tuberculosis ...	49
Exercises and baths in the treatment of heart failure ...	4
—, Muscular, in nervous diseases...	78
Exophthalmic goitre, Thymus feeding in, 24; treatment of, 205	
Expectoration, Albuminous or serous, after paracentesis for serous effusion ...	50
Extirpation in treatment of aneurysms	200
Extra-uterine fœtation, operation near full term ...	339
Eye, Diseases of ...	374
—, Reflex disturbances of, and nasal affections, 385	
Factories, Inspection of ...	437
Fat-milk ...	159
Ferratin, Therapeutic uses of ..	400
Fever, Bilious Læmoglobinuric, 425; chloroform water in, 426; ergot in, 427	
—, malarial, Tannin in, 427; analgene in, 428; hypodermic injections of quinine in, 428; external application of creasote in, 459	
—, scarlet, Treatment of ...	147
—, typhoid, Treatment of, 144; serum of immunised animals in, 146; laparotomy for perforation in, 147; phenacetin in, 147; and oysters, 435	
Fevers, Infectious ...	136
Fibroids and sterility ...	312
Fibro-myomata, Uterine, and sterility	313
Filaria loa ...	429
Filters, Pasteur ...	431
Flat-foot, Treatment of ...	227
Flechzig's treatment of epilepsy ...	72
Fluorol as an antiseptic... ..	456
Fluoroscope, The, in surgery ...	175
Focal epilepsy, Surgical treatment of	192
Fœtal head, Presentation of ...	353
Fœtation, Extra-uterine, operation near full term... ..	339
Fœtus in utero, New theory as to position of ...	354
Food for diabetics ...	115
— and exercise in pulmonary tuberculosis ...	49
— passages, Foreign bodies in ...	415
Foreign bodies in the air and food passages ...	415
Formalin gelatine as a dressing, 457; as material for capsules, 458	

	PAGE
Formalin in gonorrhœa, 279; in ring-worm, 364; in hyperidrosis and bromidrosis, 370; in ophthalmic practice, 375; in granular lids, 376; as a disinfectant, 434; as an antiseptic, 457	
Formic aldehyde, <i>see</i> Formalin	
Formin in urinary diseases ...	465
Fractures, Ambulatory treatment of, 186; massage and early mobilisation in the treatment of, 188	
Frontal sinus, Drainage of ...	412
Fundus uteri, its variation in height above symphysis during puerperium ...	317
Gall-stones, Treatment of ...	94
Ganglion, Gasserian, Excision of ...	195
Gangrene, pulmonary, Surgical treatment of... ..	204
Gargles, Inefficiency of, in diseases behind fauces... ..	418
Gasserian ganglion, <i>see</i> Ganglion	
Gastric crises in tabes ...	79
Gastro-intestinal diseases, Antiseptics in ...	159
Gastropexy ...	214
Gastrostomy ...	216
Gelanthum, a new varnish ...	373, 459
General paralysis of the insane, Lumbar puncture in ...	66
Genito-urinary system, Diseases of...	253
Glands, mammary and thyroid, Surgery of ...	204
—, tuberculous, Excision of, 237; and carious teeth, 233	
Glaucoma, Iridectomy in ...	383
Glénard's disease, Abdominal section in treatment of ...	93
Glycosuria, phlorizin, Action of reputed diabetic remedies on ...	116
Goitre and its treatment ...	204
—, exophthalmic, Thymus feeding in, 24; treatment of, 205	
Gonorrhœa, Argonin in, 277; irrigations of potassium permanganate in, 278; formalin in, 279	
Gout, rheumatism, and rheumatoid arthritis ...	124
—, Treatment of, 124; metabolism in relation to, 126; in relation to life assurance, 128; guaiacum in, 451	
Granular lids, Treatment of ...	376
Granulations of middle ear, Treatment of ...	402
Graves's Disease, 24; intestinal antiseptics in, 26; Nauheim baths and exercise in, 7	
Guaiacol in pulmonary tuberculosis, 36; as a local anæsthetic in ear disease, 403; in affections of the throat and nose, 409	
Guaiacum in gout, 127; in gouty affections, 451	
Guinea-worm, Treatment of ...	430
Gymnastics in nervous diseases ...	78

	PAGE
Hæmatinics... ..	460
Hæmatocele, Pelvic, 288; treatment of, 290	
Hæmatoporphyrinuria caused by sulphonal	448
Hæmoglobinuric fever, Treatment of, 425; quinine in, 426; chloroform water in, 426; ergot in, 427	
Hæmorrhage, Amaurosis after, 383; injections of saline fluids in, 179	
—, subconjunctival, Eserine in ...	378
Hæmorrhoids, Whitehead's operation for, 267; clamp forceps for suturing, 268; intra-peritoneal, 286	
Head, foetal, Presentation of ...	353
Heart and circulation, Diseases of ...	1
— disease and pregnancy, 332; self-poisoning in, 14	
—, Effect of Schott treatment on the size of	15
— failure, Baths and exercises in the treatment of	4
—, Suture of wound of	199
Hemp, Indian, <i>see</i> Cannabis Indica	
Hepatopexy... ..	213
Hernia of ovary in infants with torsion of the pedicle	242
Hip, Treatment of congenital dislocation of	232
Honey, Poisonous	442
Hydatid cysts of lung, Surgical treatment of... ..	204
Hydrocele serum, Injections of, in early syphilis	275
Hygiene	431
Hyoscine, its toxic effects and their treatment	448
Hyperacidity of gastric contents and oxaluria	90
Hyperidrosis, Tannoform in	370
Hypertrophy, prostatic, Treatment of	257
Hypnotics	69, 463
— and sedatives in insanity	76
Hysterectomy for pelvic suppuration	293
Hystero-salpingo-oophorectomy for pelvic suppuration	299
Ice creams	437
Ichthyol in pulmonary tuberculosis, 38; in ophthalmic practice, 374; in intestinal disorders, 460	
Ichthyolvasogen in eczema	362
Iliac artery, external, Transperitoneal ligature of	202
Impregnation, Effects of lactation on	319
Infant, The new-born	356
— feeding... ..	87
Infantile intussusception	88, 220
Infants, Renal colic in, 104; prevention of purulent ophthalmia in, 375	
Infectious fevers	136
Infiltration anæsthesia (Schleich) ...	164
Inflamed breasts, Treatment of ...	351
Influenza in pregnant women ...	330
Inhaler, Chloroform	171
Injections, Hypodermic, of pancreatic extract in diabetes, 114; of quinine in malaria, 428	

	PAGE
Injections, Intramuscular, of calomel in syphilis	270
—, Intravenous, of mercurial solutions in syphilis	273
— of hydrocele serum in early syphilis	275
Inoculation experiments in guinea-pigs in the diagnosis of pulmonary tuberculosis	43
Inoculations, Anti-cholera	434
—, Antistreptococcal	434
Innominate artery, Ligature of ...	201
Insanity, 75; use of animal extracts in, 67; of pregnancy and the puerperal state, 75; sedatives and hypnotics in, 76	
Insomnia due to pain, Trional in ...	71
Intertrigo, Chromic acid in	371
Intestinal antiseptics, 85; in Graves's disease, 26	
— antiseptics	86
— exclusion	221
— resection and suture	218
Intestines, Diseases of	80
Intra-peritoneal hæmorrhage	286
Intra-uterine photography	318
Intubation in diphtheritic laryngitis	237
Intussusception	247
—, Infantile	83, 220
Iodide of potassium in necrosis of the turbinals	411
Iodine in treatment of choroiditis ...	379
— salts in the treatment of syphilis	276
Iodoform in psoriasis, 366; in middle-ear suppuration, 395	
Ipecacuanha, de-emetised, in dysentery	92
Iridectomy in glaucoma... ..	383
Iron, Methods of administering ...	453
Isolation in tuberculosis	436
Itching, <i>see</i> Pruritus	
Izal, Antiseptic properties of	456
Jacksonian or focal epilepsy, Surgical treatment of	192
Jaw, lower, Splint for use after resection of	192
Jurisprudence, Medical... ..	438
Kephir	102
Keratitis, purulent, Bacteriology of... ..	379
Kidney colic in young children ...	253
— disease, Internal administration of kidney extract in, 105; cantharides in relation to, 103	
— —, chronic, Albumosuria in ...	109
— extract, Internal administration of, in kidney disease	105
—, Resection of a portion of a, 253; rupture of, 254	
Kidneys, Action of diphtheria anti-toxin upon	123
—, Diseases of	97
Klebs's antiphthisin in pulmonary tuberculosis	36
Kraske's operation	267

	PAGE		PAGE
Lactate of strontium in nephritis ...	102	Malaria, Etiology and pathology of, 423; skin eruptions due to, 423; quinine in, 423; tannin in, 427; hypodermic injections of quinine in, 428	
Lactation, Effects of, on menstruation and impregnation ...	319	Malarial fever, Tannin in, 427; anal-gene in, 428	
Lactophenin ...	449	Malignant disease, Serumtherapy for. 182	
Lamb's serum in lupus erythematosus	360	Mammary and thyroid glands, surgery of ...	204
Laparotomy for perforation in typhoid fever, 147; for pelvic hæmatocele, 291; for pelvic suppuration, 296		— cancer, Treatment of, 209; in-operable treatment of, by oöphor-ectomy and thyroid extract, 209	
Laryngitis, acute simple, Treatment of... ..	419	Mannitol hexanitrate in heart dis-ease	21
—, Catarrhal	418	Maragliano's serum in pulmonary tuberculosis	31
—, chronic, Treatment of	418	Marginoplasty, Tarsal	386
—, tuberculous, Curability of, 420; treatment of, 420		Marmorek's serum in erysipelas, 181; in puerperal septicæmia, 346	
Laryngo-fissure for laryngeal papillo-mata, 419; in laryngeal epithe-lioma, 421		Massage in the treatment of frac-tures	183
Laryngology, New publications relat-ing to laryngology and rhin-ology	421	Mastoiditis, Bezold's	401
Larynx, tuberculosis of, Sulphuricin-ate of phenol in, 408; epithelioma of, its treatment, 420		Mastoid operation in otorrhœa ...	397
Lavage of the blood	90, 179	Meat poisoning, 441; prescription for use in, 442	
Leg, Treatment of paralytic deform-ities of	231	Mechano-therapy of cardiac disease... ..	18
Lens, Removal of, in progressive high myopia and in detachment of retina	381	Medical diseases of children	149
Leprosy, Rabbit's serum in, 371; horse's serum in, 371; tuberculin in, 371		— evidence and professional secrecy 444	
Leucocytosis in tuberculous processes	45	— jurisprudence	438
Lids, granular, Treatment of	376	— men in courts of law	444
Lignosulfit in pulmonary tuberculosis	38	Medication, Cardiac	20
Limb, lower, Treatment of paralytic deformities of	231	Medulla oblongata, Electrization of, for diabetes insipidus	115
Lime salts in the treatment of dia-betes mellitus	113	Membranous colitis	81
Ling system of exercises in heart failure	4	Menstruation, Effects of lactation on	319
Lingual varix	417	Mental and nervous diseases, Treat-ment of... ..	61
Lithium salts, Diuretic action of ...	119	Menthol in pulmonary tuberculosis... ..	41
Liver, Diseases of... ..	80	Mercurial injections in psoriasis ...	366
—, Resection of, for cancer, 80; fix-ation of, 213		— solutions, Intravenous injections of, in syphilis... ..	273
Llangamarch Wells, Nauheim treat-ment of heart disease at	12	Mercury, Bichloride of, in treatment of guinea-worm	420
Loeffler's bacillus in diphtheria ...	142	—, Perchloride of, in pulmonary tuberculosis	40
London, Sea-water for	431	Metabolism in relation to gout	126
Lumbar puncture, 61; therapeutic effects of, 64; objections to and bad effects of, 65; in general paralysis of the insane, 66; of subarachnoid space, 197; of theca vertebralis, 245		Metatarsalgia, Treatment of	230
Lung, Abscess of	53	Metropolitan Asylums Board, report on antitoxin	137, 445
—, Surgery of	202	Micro-organisms of obstetrical and gynæcological interest	350
—, —, General conclusions in, 53; perforated, operation for, 47; re-section of diseased portion of, 48		Middle ear, Chronic suppurative dis-ease of, 393; treatment of polypi and granulations of, 402	
Lungs and organs of respiration, Diseases of	27	Midwifery	317
Lupus, Treatment of	358	Milk, Modified, for diabetics	115, 159
— erythematosus, Lamb's serum in	360	—, Pasteurised	151, 155
Lymph, variolous and vaccine... ..	433	— steriliser, Cathcart's, 88, 153; Aymard's, 154	
Lysidine in gout	126	—, Sufficiency of, after birth	319
		—, Whole, sterilised, 149; advan-tages and disadvantages of, 150; value of, 157	
		Mineral-water treatment of gout ...	127
		Morphine poisoning, Permanganate of potassium in	439, 440

	PAGE		PAGE
Morton's disease, Treatment of ...	230	Onychomycosis, Treatment of...	363
Mouth and naso-pharynx, Association of diseases of, with chronic inflammation of the gastric mucous membrane ...	410	Oöphorectomy in inoperable cancer of breast, 209; for osteomalacia, 337	
Mycosis fungoides, Arsenical treatment of...	369	Ophthalmia, purulent, in infants, Prevention of ...	375
Mydriatics, Strength of the different	375	Opium poisoning, Permanganate of potassium in ...	439, 449
Mye in in insanity ...	69	Optic nerve, Syphilitic lesions of ...	384
Myopia, Operative treatment of, 380; progressive high, removal of lens in, 381		Orthopædic surgery ...	225
Myotics, Strength of the different ...	375	Os calcis, Restoration of ...	191
Naphthol, Camphorated, in lupus ...	358	Osseous system, Surgery of ...	186
Naphtholated chinolin gauze in middle-ear suppuration ...	395	Osteomalacia ...	333
Nasal catarrh ...	413	Osteomyelitis, acute infective, Treatment of, 189; acute primary, of vertebræ, 190	
— — —, Suppurative, in children ...	415	Otorrhœa, Stacke-Zaufal mastoid operation in ...	397
— sinuses, Treatment of suppuration in ...	411	Ovarian extract in insanity ...	69
Naso-pharynx, Association of diseases of, with gastric disorder ...	410	Ovary, Hernia of, in infants, with torsion of the pedicle ...	242
Nauheim treatment, The <i>rationale</i> of, 15; criticisms of, 18; general considerations upon the, 19		Ovoids, Carbolicised gelatine, in ear disease ...	404
Necrosis of turbinals, Iodide of potassium in ...	411	Oxaluria, Relation of, to hyperacidity of gastric contents ...	90
Nephritis, 102; strontium lactate in, 102; in the newly born, 103; surgical treatment of, 103; presence of uric acid in the blood in, 109		Oxygen and chloroform ...	170
Nephropexy, New operation for ...	215	Oysters and typhoid fever ...	435
Nephrorrhaphy, New operation for ...	215	Ozæna ...	411
Nephro-ureterectomy ...	254	Pancreas, Cancer of ...	95
Nerve extraction in neuralgia...	194	—, Inflammatory enlargements of, capable of undergoing resolution	96
Nervous and mental diseases, Treatment of...	61	Pancreatic extract, Injections of, in the treatment of diabetes...	114
— diseases, Muscular exercises in...	78	Papillomata of larynx, Treatment of	419
— system, Surgery of...	192	Paracentesis for serous effusion, Albuminous or serous expectoration after ...	50
Neuralgia, Cocaine in, 77; surgical treatment of ...	194	Paralysis, General, <i>see</i> General Paralysis	
Neurasthenia, Disinfection of throat in ...	410	Paralytic deformities of the lower limb, Treatment of ...	231
Neurexaresis, Thiersch's operation of	194	Parietal incision ...	210
New-born children, Nephritis in ...	103	Paroxysmal tachycardia, Treatment of...	26
— — — infant, The ...	356	Pasteurisation of milk ...	151, 155
— — —, Photography, The, 174. <i>See also</i> Roentgen		Patella, slipping, Treatment of ...	231
Nitrate, Uranium, in diabetes...	113	Peas, Coppered ...	442
Nitrates of erythrol and mannitol in heart disease ...	20	Pellotin, a new hypnotic ...	69, 463
Nitro-glycerine in angina pectoris, 21; in sciatica, 77		Pelvic hæmatocele, <i>see</i> Hæmatocele	
Nose, Relation between affections of, and reflex ocular disturbances, 385; general therapeutics of diseases of, 408; chronic suppuration in the accessory cavities of, 411; uselessness of antiseptic solutions in, 414		— presentations ...	353
— and throat, Diseases of ...	405	— suppuration, Treatment of ...	293
— — —, Connection of diseases of, with remote symptoms ...	409	Pental as an anæsthetic, 172, 463; death under, 440	
Nosophen as a substitute for iodoform in ophthalmic practice ...	375	Perchloride of mercury in pulmonary tuberculosis ...	40
Oertel method of treatment in heart failure ...	5	Perforation, duodenal, Suture of ...	83
		—, typhoid, Operation for, 83; laparotomy for, 147	
		Perlèche ...	163
		Permanganate of potash, in pulmonary tuberculosis, 41; irrigations of, in gonorrhœa, 278; in opium and morphine poisoning, 439, 449	
		Pertussis, <i>see</i> Whooping Cough	
		Pharyngitis, chronic, Treatment of...	418
		Pharynx and tonsils ...	416
		Phenacetin in typhoid fever ...	147
		— idiosyncrasy ...	440

	PAGE
Phenocoll hydrochlorate in bronchitis of children, 161; in whooping cough, 162	
Phenol and pilocarpin, Combination of, in pulmonary tuberculosis ...	41
—, Sulphuricinate of, in laryngeal tuberculosis ...	408
Phlorizin glycosuria, Action of reputed antidiabetic remedies on ...	116
Phosphate of soda in exophthalmic goitre ...	203
Photography, The new, <i>see</i> Roentgen	
—, Intra-uterine ...	318
Phthisis, <i>see</i> Tuberculosis	
Picric acid as a surgical dressing for burns, 178; as a dressing for burns, 458	
— test for sugar, Modification of ...	117
Pilocarpin and phenol, Combination of, in pulmonary tuberculosis ...	41
— in eclampsia ...	103
Piperazine in gout, 126; mode of administering, 454	
Plague, bubonic ...	435
Pleura, Diseases of the ...	50
Pleural effusion, Serous ...	50
Pleurisy, Pulsating, 52; chronic right-sided, with constriction of the superior vena cava simulating intra-thoracic tumour, 52	
Pneumectomy ...	203
Post-nasal growths, Treatment of, 415; their relation to suppurative nasal catarrh in chorea, 415	
— scarlatinal diphtheria ...	435
Potassium bromide, Poisoning by ...	440
— cantharidinate in cutaneous tuberculosis ...	360
— iodide in necrosis of the turbinates ...	411
— permanganate in gonorrhœa, 278; in pulmonary tuberculosis, 41; as an antidote to opium and morphine poisoning, 449	
Pregnancy, Treatment of insanity of ...	75
— and heart disease ...	332
— and labour after the operative cure of retroflexion of the uterus ...	283
—, Sepsis during ...	350
—, tubal ...	287
Pregnant women, The care of, 317; influenza in, 330	
— uterus, Cancer of ...	337
Presentations, Pelvic ...	353
Prostatic hypertrophy, Treatment of ...	257
Prurigo, Thyroidin in ...	372
Pruritis, Salophen in ...	368
Psoriasis, Treatment of, 366; thyroiodinum siccum in, 372	
— associated with diabetes mellitus ...	116
Ptoxis, Visceral, <i>see</i> Glénard's disease	
Public health and hygiene ...	431
Puerperal state, The ...	345
—, Insanity of ...	75
— septicæmia, Streptococcus antitoxin in ...	345
Pulmonary abscess, Surgical treatment of ...	204
— gangrene, Surgical treatment of ...	204

	PAGE
Pulmonary tuberculosis, 28; early diagnosis of, 43; surgical treatment of, 47; food and exercise in, 49	
Pulsating pleurisy ...	52
Puncture, Lumbar, 61; therapeutic effects of, 64; objections to and bad effects of, 65; in general paralysis of insane, 66; of theca vertebralis, 245	
—, vaginal, for pelvic suppuration ...	297
Purulent ophthalmia in infants, Prevention of ...	375
Pyæmia, Antistreptococcic serum in ...	181
Pylorotomy for cancer of the pylorus ...	81
Pylorus, cancer of, Pylorotomy for ...	81
Pyo-pneumothorax, Operation for ...	47
Pyrogallic-acid poisoning ...	441
Quinine amaurosis, 389; in hæmoglobinuric fever, 426; hypodermic injections of, in malaria, 428; methods of administration, 450	
Radiography, <i>see</i> Roentgen	
Rectum, Diseases of, 263; operative treatment of cancer of, 263; value of sacral operations in diseases of, 266; modern operative treatment of cancer of, 265	
Remedies, New ...	445
Renal and cardiac disease, Theobromine as a diuretic in ...	23, 118
— colic in infants, 104; treatment of, 105	
— extract in kidney disease ...	105
Renipuncture in albuminuria ...	255
Report of Royal Commission on Vaccination ...	432
Resection of liver for cancer ...	80
Respiration, Artificial ...	413
Respiratory organs, Diseases of ...	27
Retina, detached, Removal of lens in ...	381
Retinitis albuminurica, duration of life after the appearance of ...	387
Retro-displacements of uterus, Operative treatment of ...	281
Rheumatic fever, Tonsillitis as a factor in, 130; serum injections in, 131; disinfection of mouth in, 410	
Rheumatism, gout, and rheumatoid arthritis ...	124
—, Treatment of, 129; epidemic outbreaks of, 129	
Rheumatoid arthritis, rheumatism, and gout ...	124
—, Treatment of, 132; utero-ovarian irritation as a factor in, 134; galvanic bath in, 134	
Ringworm, Formalin in ...	364
— of nails, Treatment of ...	366
Roentgen rays in general surgery, 174; relative to surgery of the urinary organs, 262; in rhino-laryngology, 405; their use in the case of foreign bodies in upper air and food passages, 416	

	PAGE		PAGE
Sacral operations in diseases of rectum and other pelvic organs ...	266	Serumtherapy for malignant disease, 182; in syphilis, 274	
Salacetol as an antiseptic ...	454	Shock, Injection of saline fluids in ...	179
Salicylate gauze in middle ear suppuration ...	395	Sinus, frontal, Drainage of ...	412
— of strontium as an intestinal antiseptic ...	465	Sinuses, nasal, Treatment of suppuration in ...	411
— of theobromine as a substitute for diuretin ...	465	Skiagraphy, <i>see</i> Roentgen	
Saline fluids, Injections of, in hæmorrhage, 179; in septicæmia and toxæmia, 179; in diphtheria, 180; in uræmia, 180; in diabetic coma, 180		Skin, Diseases of ...	357
— injections, Subcutaneous, in hæmorrhage from typhoid fever	146	— eruptions, Malarial... ..	423
Salol as an intestinal antiseptic ...	455	—, Tuberculosis of ...	359
Salophen in pruritus ...	368	Soda, phosphate of, in exophthalmic goitre ...	206
Salpingo-oophorectomy for pelvic suppuration ...	298	Sodium fluoride as an antiseptic ...	456
Sanatoria for consumptives ...	28	Sore throat, Treatment of ...	417
Scabies, Balsam of Peru in ...	367	Spermatic extract in insanity ...	69
Scarlet fever, Treatment of ...	147	Spermin as a cardiac tonic ...	22
Schott system of exercises in heart failure ...	5	Splenopexis... ..	215
— treatment, Effect of, on the size of the heart ...	15	Splint for use after resection of lower jaw ...	192
Sciatica, Nitroglycerine in ...	77	Squint, Treatment of ...	389
Sclerosis, disseminated, <i>Ætiology</i> of	79	Stacke's operation, in middle-ear suppuration, 399; transplantation of Thiersch's skin flaps in, 400	
Scrofuloderma, Thyroid extract in ...	359	Stacke-Zaufal mastoid operation in otorrhœa ...	397
Seaside hospitals for consumptive children ...	28	Starch, Digestion of, in the stomach	91
Sea-water for London ...	431	Sterilisation, Methods of ...	152
Secrecy, Professional, and medical evidence ...	444	Sterilised milk, whole, 149; advantages and disadvantages of, 150; value of, 157	
Section, Abdominal, in Glénard's disease, 93; formation of adhesions after, 315		Sterility, Fibroids and ...	312
Sedatives and hypnotics in insanity...	76	Sterno-mastoid tumour, Congenital, and wryneck ...	241
Seminal vesiculitis, Treatment of ...	279	Stomach, intestines, and liver, Diseases of ...	80
Sepsis during pregnancy ...	350	—, Digestion of starch in, 91; chronic inflammation of, associated with diseases of the mouth and naso-pharynx, 410	
Septicæmia, Injections of saline fluids in... ..	179	Strabismus, Treatment of, 389; vision in the subjects of, 391	
—, puerperal, Streptococcus antitoxin in... ..	345	Streptococcus antitoxin in puerperal septicæmia ...	345
Serous effusions, Pleural ...	50	Stricture, urethral, Resection for ...	260
— expectoration after paracentesis	50	Strontium bromide in epilepsy ...	465
Serum, artificial, Intravenous injections of, in tachycardia ...	26	— lactate in nephritis ...	102
—, antidiphtheria, Cutaneous eruptions after injections of, 35; efficacy of, given by the mouth, 142; enemata of, 142. <i>See also</i> Antitoxin		— salicylate as an intestinal antiseptic ...	465
—, Anti-streptococcus, in pulmonary tuberculosis, 36; in scarlet fever, 148; in infective conditions, 180		Subarachnoid space, Lumbar puncture of ...	197
—, blood, Injections of, in exanthemata... ..	148	Sublimate as a disinfectant ...	433
— diagnosis of typhoid fever ...	145	— gauze in middle-ear suppuration	395
—, Horse's, in leprosy ...	371	— injections in pulmonary tuberculosis ...	40
— hydrocele, Injections of, in early syphilis ...	275	Sugar, reaction in urine after the administration of sulphonol, 117; modification of picric-acid test for, 117	
—, Rabbit's, in leprosy ...	371	Sulphonol, Poisonous effects of, 70; as a hypnotic, 70; sugar reaction in urine after the administration of, 117; its toxic effects and their treatment, 448	
— treatment of pulmonary tuberculosis, 31; of rheumatic fever, 131; of typhoid fever, 146; in malignant disease, 184; in tetanus, 184; in lupus erythematosus, 360; in ozæna, 411		Sulphoricinate of phenol in laryngeal tuberculosis ...	408
		Suppuration, pelvic, Treatment of ...	293
		— of the uterine appendages, Surgical treatment of ...	299

	PAGE
Supra-renal extract in treatment of	
Addison's disease	95
Surgery, General	174
— of the lung, Conclusions on ...	53
—, General methods in, 174; of the osseous system, 186; of the nervous system, 192; of the vascular system, 199; of the lung, 202; of the thyroid and mammary glands, 204; of the abdomen, 210	
Surgical diseases of children ...	236
Suture of wound of the heart ...	199
Swedish system of exercises in heart failure	4
Sycosis, Treatment of	368
Symphysiotomy	341
Syphilis, and tabes dorsalis, 78; intramuscular injections of calomel in, 270; intravenous injections of mercurial solution in, 273; serum-therapy in, 274; injections of hydrocele serum in, 275; toxins of erysipelas and the bacillus prodigiosus in, 276; relative value of iodine salts in, 276	
— antitoxin, Use of, 275	
—, hereditary, Diseases of the eye due to	387
Tabes dorsalis, and syphilis, 78; gastric crises in, 79; mechanical treatment of, 79	
Tachycardia, paroxysmal, Treatment of... ..	26
Tallerman-Sheffield apparatus in treatment of rheumatic affections ...	135
Tannalbin as an astringent	460
Tannigen as an intestinal astringent, 92; in gastro-intestinal disease, 160; as an astringent, 460	
Tannin in malarial fever	427
Tannoform in hyperidrosis and bromidrosis, 370, 372; as an astringent, 459	
Tarsal marginoplasty	386
Teeth, Carious, and tuberculous glands	238
Temporo-sphenoidal abscess, Trephining for	403
Tetanus, Treatment of, 73; antitoxin in, 74; antitoxic serum in, 184	
Tetany, Thyroid extract in	69
Theca vertebralis, Lumbar puncture of	245
Theobromine as a diuretic in cardiac and renal disease	23, 118, 464
— salicylate as a substitute for diuretin	465
Therapeutics of the year 1895-6, Summary of	445
Thiersch's operation of neurexaresis...	194
— skin flaps, Transplantation of, in Stacke's operation	400
Throat diseases, General therapeutics of	408
— and nose, Diseases of	405
— — —, Connection of diseases of, with remote symptoms ...	409

	PAGE
Thymus feeding in exophthalmic goitre	24
Thyreo-iodinum siccatum in psoriasis	372
Thyroid and mammary glands, Surgery of	204
— medication in cardio-vascular affections, 23; in insanity, 67; in acromegaly, 69; in tetany, 69; in simple goitre, 205; in exophthalmic goitre, 206; in operable cancer of breast, 209; in scrofuloderma, 359; in psoriasis, 372	
Thyroidin in simple goitre, 204; in exophthalmic goitre, 206; in prurigo, 372	
Thyrotomy for laryngeal papillomata	419
Tongue, Varicose veins at base of ...	417
"Tonsil cough"	416
Tonsillitis as a factor in rheumatic fever, 130; treatment of, 417	
Tonsils and pharynx	416
Torticollis, its connection with sternomastoid tumour	241
Toxæmia, Injection of saline fluids in... ..	179
Toxins of erysipelas in lupus	358
— and bacillus prodigiosus in malignant disease, 182; in syphilis, 276	
Trachoma, Immunity from	377
Traumatol as an antiseptic	457
Trional, Poisonous effects of, 70; as a hypnotic, 463	
Tropical diseases	423
Tsetse-fly disease	424
Tubal pregnancy	287
Tuberculin in pulmonary tuberculosis, 36, 44; in lupus, 358; in leprosy, 371	
Tuberculosis and isolation	436
—, cutaneous, Thyroid extract in, 359; Bier's congestive treatment in, 360; potassium cantharidinate in, 360	
—, laryngeal, Sulphoricate of phenol in, 408; curability of, 420; treatment of, 420	
—, pulmonary, Maragliano's serum in, 31; antistreptococcus serum in, 36; tuberculin in, 36, 44; antiphthisin (Klebs) in, 36; creasote in, 36; guaiacol in, 36; lignosulfit in, 38; ichthyol in, 38; small doses of calomel in combination with other drugs in the early stages of, 40; perchloride of mercury injections in, 41; cinnamic acid in, 41; permanganate of potash in, 41; combination of phenol and pilocarpin (Cyrus Edson) in, 41; alcohol in, 41; inoculation experiments in guinea-pigs in the diagnosis of, 43; leucocytosis in, 45	
— of the skin	359
Tuberculous cavity, Incision of, 48; surgical treatment of, in lung, 203	
— glands, Excision of, 237; and carious teeth, 238	

	PAGE		PAGE
Turbinals, necrosis of, Iodide of potassium in	411	Vaccination, 432; centenary of, 432; report of Royal Commission, 432	
Twins, Influence of inheritance on tendency to have	319	Vaccine lymph, Bacteriology of ...	433
Twisted ovarian pedicle in an infant	242	Vagina, Cysts of	309
Typhoid fever with perforation, Operation in, 83; serum diagnosis of, 144; treatment of, 144; serum of immunised animals in, 146; laparotomy for perforation in, 147; phenacetin in, 147; bone lesions after, 190; and oysters, 435		—, Corroding ulcer of	311
Ulcer of the duodenum, perforated, Suture of	82	Vaginal fixation, Pregnancy and labour after	283
— of the vagina, Corroding	311	Valvular heart disease	1
Ulcers, corneal, Treatment of ...	379	— disease, aortic, Treatment of ...	2
Uræmia, Injections of saline fluids in	189	Varix, Lingual	417
Uranium nitrate in diabetes mellitus	113	Vascular system, Surgery of	199
Urethra, male, Rupture of, treated by external urethrotomy and suture	259	Vasectomy for enlarged prostate ...	258
— and catheters, Sterilisation of ...	261	Vaso-dilators, New	20
Urethral resection for stricture ...	260	Venereal diseases... ..	270
Urethrotomy in treatment of rupture of male urethra	259	Ventrifixation, Cœliotomy for post-partum accidents due to	344
Uric acid in the blood in nephritis ...	109	Version, Prone position for	343
— — infarctions in newly born ...	103	Vertebræ, Acute primary osteomyelitis of	190
— — concretions, Treatment of... ..	122	Vertebral artery, Ligature of... ..	201
Urinary organs, Roentgen rays in relation to	262	Vesiculitis, seminal, Treatment of ...	279
Urine, Sugar reaction in, after the administration of sulphonal, 117; excretion of oxalic acid in, 121		Viscera, loose and movable, Fixation of	212
Urotropine, <i>see</i> Formin		Vision in the subjects of strabismus	391
Urticaria, Treatment of	363	Water supply	431
Uterine appendages, Surgical treatment of	299	Weight development of prematurely born children... ..	356
Uterus, Operative treatment of retro-displacements of, 281; pregnancy and labour after the operative cure of retroflexion of, 283; didelphys, 331; pregnant cancer of, 337; rupture of, 343; new theory as to position of foetus in, 354		Whitehead's operation for hæmorrhoids	267
—, Fundus of, its variation in height above symphysis during puerperium	317	Whitelegge, Dr., his appointment as Inspector of Factories	437
		Whooping-cough, Phenocoll hydrochlorate in, 162; nasal insufflations in, 410	
		Women, Diseases of	281
		—, pregnant, Care of, 317; influenza in, 330	
		Wounds, arterial, Closure of, by suture	202
		—, aseptic, Treatment of, without bandages or dressings	177
		Wryneck, its connection with sternomastoid tumour	241
		X rays, <i>see</i> Roentgen	





INGLUVIN is a very appropriate name for this remedy. It is the essential principle of the gizzard, and bears the same relation to poultry that pepsin does to the higher animals. The honour of its discovery and utilisation, in its crude state, remotely dates back to the Chinese gastronomer, as well as (in its refined condition) to the Caucasian chemist. From time immemorial the inhabitants of the Celestial Empire have used the gizzards of chickens and ducks in nearly all made dishes. Their writers have recommended the practice as a sovereign treatment of dyspepsia, weak stomach, and vomiting. A favourite prescription of Chinese physicians for chronic indigestion is to cut up and digest chicken gizzards in hot water until they are reduced to a pulp, and then add some spices. A tablespoonful or two of the resulting paste is taken at each meal until the patient has entirely recovered. From China the practice passed to other parts of Asia, and was adopted here and there among the Mediterranean people. Strange to say, it was never learned by the great nations of Europe until the latter part of the present century. On the other hand, the organic chemists of Europe discovered, about 1850, a powerful nitrogenous radical in the gizzard. Experiments thereafter showed it to possess many of the qualities of pepsin. These experiments led to its isolation. Numberless experiments have proved it to be a very valuable addition to therapeutics. Where pepsin refuses to act, and where in severe cases it has even been rejected by the stomach, INGLUVIN has effected relief rapidly and with the greatest ease.

A priori, it would seem as if INGLUVIN should be more efficient and potent than pepsin in many cases of physical disorder.

Our poultry are chiefly granivores, and have no beak nor other buccal apparatus for crushing the hard grain and seeds on which they so largely feed. The food is swallowed when apprehended, and passes directly into the crop or gizzard. This seems to act both mechanically and chemically. Its interior walls are covered by a dense hard membrane, surrounded by muscles of the most powerful type. Along with the food is always a small amount of sand and gravel. The organ acts apparently by bruising and cracking, rather than, as commonly believed, by trituration. The motion of the ingluvial muscles is accompanied by a slow but continuous exudation, from the walls of the crop, of a strong organic fluid, of which INGLUVIN is the chief constituent. The hull of the grain, or the shell of the seed, is broken by the pressure of the walls and the gravel, and their interior is exposed to the chemical action of the INGLUVIN. By the time it reaches the stomach it is ready for the gastric juices. From this point on digestion proceeds as with the higher animals. As the gallinaceæ have very small salivary glands, and as the fluids secreted by these resemble the secretion of the parotid rather than that of the sublingual and submaxillary glands of the human being, it would seem as if INGLUVIN played a double part, exercising the functions of the ptyalin of the saliva as well the pepsin of the stomach. INGLUVIN is prepared by WM. R. WARNER & Co., Pharmaceutical Chemists. It is made from selected gizzards, and is so carefully extracted as to be free from all foreign organic bodies. It is already widely known and appreciated by the medical profession. It is claimed to be a specific for sickness in gestation.

This preparation is not more expensive than high test pepsin. Per oz., 4s. Samples for trial free on request to any member of the Medical Profession.

WARNER & Co.'s Ingluvine, Parvules, Soluble-coated Pills, and other preparations may be obtained of the following, in addition to many others:—Duncan & Flockhart and Raimes & Co., Edinburgh; Evans, Sons & Co., Symes & Co., and J. Thompson, Limited, Liverpool; M'Master & Co., Dublin; Davidson & Kay, Aberdeen; New Apothecaries Co., Glasgow; also in London of all wholesale houses.

SOLE DEPÔT IN GREAT BRITAIN—

F. NEWBERY & SONS (125 Years in St. Paul's),
Churchyard

1 & 3, King Edward Street, London, E.C.

Established over 150 Years.

MEDICATED BATH POWDERS.

THESE are introduced as a cleanly, convenient, and rapid method of preparing Emollient and Medicated Baths for use in the treatment of Diseases of the Skin.

By means of these Powders a Medicated Bath can at once be prepared by patient, nurse, or any untrained assistant.

The Emollient Bath Powder, Plain. This is also prepared in conjunction with the following medicaments:—

White Birch Tar.	
„ „ „ and Sulphur.	
Pine Extract.	
Sulphur.	
Sulphur, Camphor and	
Carbolic Acid.	

Sulphur, Camphor, Carbolic
Acid and Menthol.
Resorcin.
Resorcin and Sulphur.
Sublimate.
Ichthyol.
Creolin.

Other combinations can be prepared upon instructions received from any member of the Medical Profession.

LIST AND PRICES SENT ON APPLICATION.

PREPARED BY
CHARLES MIDGLEY Ltd., *Dispensing Chemists,*
23, ST. ANN'S SQUARE, MANCHESTER.

WHOLESALE AGENTS—

EDWARDS & SON, 157, Queen Victoria Street, London ; EVANS, SONS & CO.
Hanover Street, Liverpool ; J. WOOLLEY, SONS & CO., Ltd., Manchester.

ENGLISH-MADE MEDICATED SOAPS.

These Soaps are used by all the leading Dermatologists.

EXTRACT from the "YEAR BOOK OF TREATMENT" for 1896.

"CHARLES MIDGLEY, of Manchester, has earned the gratitude of the Medical Profession of England by his enterprise in supplying MEDICATED SOAPS—the value of which in the treatment of Skin Diseases is now generally recognised—of native manufacture.

"Hitherto Medicated Soaps have had to be procured from abroad, at considerable expense, and their quality has had to be taken largely on trust. Mr. Midgley now supplies Medicated Soaps which, while fully equal in quality to the products of the foreign manufacturers, are considerably cheaper."

ALKALINE BASE.

Ichthyol and Sulphur.
Sulphur.

" and Marble Sand.
Marble Sand.

White Birch Tar.
Boracic Acid.
Silicon.

SUPERFATTED BASE.

White Rose.
White Heliotrope.
Sulphur.
Ichthyol.
Birch Tar and Sulphur.
Sublimate.

Eucalyptol.
Creolin.
Ichthyol and Tar.
Menthol.
Menthol and Eucalyptus.

Naphthol and Sulphur.
Sulphur, Camphor and
Bals. Peru.
Thymol.
White Precipitate.

POWDERED SOAPS, IN BOTTLES.

The Powdered Soaps are prepared not only as a more convenient method of applying Soap as a basis for remedy in certain cases, but also as a means of preserving some of the more sensitive drugs from chemical degeneration, to which they are very liable when incorporated in a Soap Cake.

No. 1. **Ichthyol**, containing 10 per cent. Ichthyol Sulph. Amm., prepared with Alkaline and Superfatted Base.

No. 2. **White Birch Tar and Sulphur**, containing 5 per cent. Ol. Betulæ Alb., 10 per cent. Sulph. Præcipitat. B.P., prepared with Alkaline and Superfatted Base.

No. 3. **Ichthyol and Sulphur**, containing 5 per cent. Ichthyol Sulph. Amm., and 10 per cent. Sulph. Præcipitat. B.P., prepared with Alkaline and Superfatted Base.

No. 4. **Sulphur Soap**, containing 10 per cent. Sulph. Præcipitat. B.P., prepared with Alkaline and Superfatted Base.

No. 5. **White Birch Tar**, containing 10 per cent. Ol. Betulæ Alb., prepared with Alkaline and Superfatted Base.

No. 6. **Naphthol and Sulphur**, containing 2½ per cent. Naphthol and 10 per cent. Sulph. Præcipitat. B.P., prepared with Alkaline and Superfatted Base.

No. 7. **Sulphur, Camphor, Balsam Peru**, containing 5 per cent. Sulph. Præcipitat. B.P., 5 per cent. Camphor, and 5 per cent. Bals. Peru, prepared with Alkaline and Superfatted Base.

No. 8. **Menthol**, containing 2½ per cent. Menthol, prepared with Alkaline and Superfatted Base.

No. 9. **Corrosive Sublimate**, containing ½ per cent. Hydrarg. Perchlor. B.P., prepared with Alkaline Base.

No. 10. **Salicylic Acid**, containing 5 per cent. Acid Salicylic, prepared with Superfatted Base.

No. 11. **Resorcin and Salicyl**, containing 5 per cent. each Resorcin and Acid Salicylic, prepared with Superfatted Base.

No. 12. **Resorcin, Salicyl, Sulphur**, containing 5 per cent. each Resorcin, Acid Salicyl, and Sulph. Præcipitat., prepared with Superfatted Base only.

No. 13. **Grit Soap**, a substitute for Sand Soap, containing 50 per cent. of specially prepared Grit, and perfumed.

No. 14. **Resorcin and Sulphur**, containing 5 per cent. each Resorcin and Sulph. Præcipitat., prepared with Superfatted Base only.

Price 1s. per bottle.

PREPARED BY

CHARLES MIDGLEY Ltd., Dispensing Chemists,
23, ST. ANN'S SQUARE, MANCHESTER.

WHOLESALE AGENTS—MESSRS. EDWARDS & SON, 157, QUEEN VICTORIA STREET.

Manuals for Students of Medicine

A Manual of Chemistry: Inorganic and Organic, with an Introduction to the Study of Chemistry. For the Use of Students of Medicine. By ARTHUR P. LUFF, M.D., B.Sc. (Lond.), M.R.C.P., Fellow of the Institute of Chemistry, &c. &c. With numerous Engravings. *Third Thousand.* 7s. 6d.

"The author is evidently a master of his subject, and the work is one which may be confidently recommended to the student of chemistry."—*Hospital Gazette.*

Surgical Pathology. By A. J. PEPPER, M.S., M.B., F.R.C.S., Surgeon and Teacher of Practical Surgery at St. Mary's Hospital. With 99 Engravings. *New Edition, Rewritten and Enlarged,* 8s. 6d.

"A student engaged in surgical work will find Mr. Pepper's 'Surgical Pathology' to be an invaluable guide, leading him on to that correct comprehension of the duties of a practical and scientific surgeon which is the groundwork of the highest type of British surgery."—*British Medical Journal.*

First Lines in Midwifery. A Guide to attendance on Natural Labour. By G. E. HERMAN, M.B. Lond., F.R.C.P., Obstetric Physician and Lecturer on Midwifery, London Hospital. With Illustrations. *New and Revised Edition,* 5s.

"This manual is of considerable merit, and is likely to prove highly popular in London schools and lying-in hospitals."—*British Medical Journal.*

Hygiene and Public Health. By B. A. WHITELEGGE, M.D., B.Sc. Lond., D.P.H. Camb. With 23 Illustrations. *Fifth Edition.* 7s. 6d.

"It is in every way perfectly reliable and in accordance with the most recently acquired knowledge."—*British Medical Journal.*

Elements of Histology. By E. KLEIN, M.D., F.R.S., Lecturer on General Anatomy and Physiology in the Medical School of St. Bartholomew's Hospital, London. With 194 Illustrations. *Enlarged Edition.* 7s. 6d.

"A work which must of necessity command a universal success. It is just exactly what has long been a desideratum among students."—*Medical Press and Circular.*

Surgical Applied Anatomy. By FREDERICK TREVES, F.R.C.S., Surgeon to, and Lecturer on Anatomy at, the London Hospital. With 61 Engravings. *Sixteenth Thousand.* 7s. 6d.

"The author of 'Surgical Applied Anatomy' is an able writer, and is also an authority on purely anatomical questions. There are excellent paragraphs on the anatomy of certain well-known surgical affections, such as hip-joint diseases, constituting a feature quite original in a work of this class, yet in no way beyond its proper scope."—*London Medical Recorder.*

Manuals for Students of Medicine (*continued*).

Clinical Chemistry. By CHARLES H. RALFE, M.D., F.R.C.P., Physician at the London Hospital. With numerous Engravings. 5s.

"The volume deals with a subject of great and increasing importance, which does not generally receive so much attention from students as it deserves. The text is concise and lucid, the chemical processes are stated in chemical formulæ, and wherever they could aid the reader suitable illustrations have been introduced."—*The Lancet*.

Human Physiology. By HENRY POWER, M.B., F.R.C.S., late Examiner in Physiology, Royal College of Surgeons of England. With 83 Engravings and Coloured Plates. *Fourth and Enlarged Edition.* 7s. 6d.

"The author has brought to the elucidation of his subject the knowledge gained by many years of teaching and examining, and has communicated his thoughts in easy, clear, and forcible language, so that the work is entirely brought within the compass of every student. It supplies a want that has long been felt."—*The Lancet*.

Materia Medica and Therapeutics. By J. MITCHELL BRUCE, M.D., F.R.C.P., Lecturer on Materia Medica at Charing Cross Medical School, and Physician to the Hospital. A full account of the many important drugs contained in the addendum to the British Pharmacopœia will be found in this Edition. *Thirty-first Thousand.* 7s. 6d.

"We welcome its appearance with much pleasure, and feel sure that it will be received on all sides with that favour which it richly deserves."—*British Medical Journal*.

Physiological Physics. By J. MCGREGOR-ROBERTSON, M.A., M.B., Muirhead Demonstrator of Physiology, University of Glasgow. With 219 Engravings. 7s. 6d.

"Mr. McGregor-Robertson has done the student the greatest service in collecting together in a handy volume descriptions of the experiments usually performed, and of the apparatus concerned in performing them."—*The Lancet*.

Surgical Diagnosis: A Manual for the Wards. By A. PEARCE GOULD, M.S., M.B., F.R.C.S., Assistant Surgeon to Middlesex Hospital. 7s. 6d.

"We do not hesitate to say that Mr. Gould's work is unique in its excellence."—*The Lancet*.

Comparative Anatomy and Physiology. By F. JEFFREY BELL, M.A., Professor of Comparative Anatomy at King's College. With 229 Engravings. 7s. 6d.

"The book has evidently been prepared with very great care and accuracy, and is well up to date. The woodcuts are abundant and good."—*Athenæum*.

CLINICAL MANUALS

For Practitioners and Students of Medicine.

"A valuable series, which is likely to form, when completed, perhaps the most important Encyclopædia of Medicine and Surgery in the English Language."—BRITISH MEDICAL JOURNAL.

On Gall-Stones and Their Treatment. By A. W. MAYO ROBSON, F.R.C.S., Professor of Surgery in the Yorkshire College of the Victoria University, &c. &c. Illustrated. 9s.

"There can be no question that this book well repays perusal, and will be the work to which all practitioners and students will turn for information on the surgery of the gall bladder."—*Provincial Medical Journal*.

The Pulse. By Sir W. H. BROADBENT, Bart., M.D., F.R.C.P., Senior Physician to, and Lecturer on Clinical Medicine at, St. Mary's Hospital. Illustrated. 9s.

"There is so much that is interesting and well done, that it is hard to emphasise any."—*Hospital*.

Ophthalmic Surgery. By R. BRUDENELL CARTER, F.R.C.S., Ophthalmic Surgeon to, and Lecturer on Ophthalmic Surgery at, St. George's Hospital; and W. ADAMS FROST, F.R.C.S., Assistant Ophthalmic Surgeon to, and Joint-Lecturer on Ophthalmic Surgery at, St. George's Hospital. With Chromo Frontispiece and 91 Engravings. *Second Edition*. 9s.

"Its clearness and conciseness will cause it to be welcomed by students and young practitioners as an agreeable and useful guide to the modern practice of eye diseases."—*British Medical Journal*.

Diseases of the Breast. By THOMAS BRYANT, F.R.C.S., Surgeon to, and Lecturer on Surgery at, Guy's Hospital. With 8 Chromo Plates and numerous Engravings. 9s.

"Mr. Bryant is so well known, both as an author and a surgeon, that we are absolved from the necessity of speaking fully or critically of his work."—*The Lancet*.

Diseases of the Rectum and Anus. By CHARLES B. BALL, M.Ch. (Dublin), F.R.C.S.I., Surgeon and Clinical Teacher at Sir P. Dun's Hospital. With Chromo Plates and 61 Illustrations. *Second Edition*. 9s.

"As a full, clear, and trustworthy description of the diseases which it deals with, it is certainly second to none in the language. The author is evidently well read in the literature of the subject, and has nowhere failed to describe what is best up to date. A model of what such a work should be."—*Bristol Medico-Chirurgical Journal*.

Syphilis. By JONATHAN HUTCHINSON, F.R.S., F.R.C.S., Consulting Surgeon to the London Hospital and to the Royal London Ophthalmic Hospital. With 8 Chromo Plates. *Seventh Thousand*. 9s.

"A valuable addition to the series of Clinical Manuals of its publishers, by an expert and accomplished writer, moderate in tone, judicious in spirit, and yet expressing the decided convictions of one whose experience entitles him to speak with authority. The student, no matter what may be his age, will find in this compact treatise a valuable presentation of a vastly important subject. We know of no better or more comprehensive treatise on syphilis."—*Medical News, Philadelphia*.

CASSELL & COMPANY, LIMITED, Ludgate Hill, London.

List of Clinical Manuals (*continued*).

Fractures and Dislocations. By T. PICKERING PICK, F.R.C.S., Surgeon to, and Lecturer on Surgery at, St. George's Hospital. With 93 Engravings. 9s.

"We must express the pleasure with which we have perused the book, and our especial admiration for the lucidity of the author's style, and the simplicity of his directions for the application of apparatus; in the latter respect it is always difficult to combine clearness with brevity, but herein Mr. Pick has been most successful."—*Glasgow Medical Journal*.

Surgical Diseases of the Kidney. By HENRY MORRIS, M.B., F.R.C.S., Surgeon to, and Lecturer on Surgery at, Middlesex Hospital. With 6 Chromo Plates and Numerous Engravings. 9s.

"Mr. Morris writes clearly and forcibly, and handles his subject very thoroughly, so that the reader rises from the perusal of the work impressed with its importance. It would be difficult to find these subjects treated more carefully and thoroughly."—*British Medical Journal*.

Insanity and Allied Neuroses. By GEORGE H. SAVAGE, M.D., late Medical Superintendent and Resident Physician to Bethlem Royal Hospital, and Lecturer on Mental Diseases at Guy's Hospital. With Numerous Illustrations. *Seventh Thousand*. 9s.

"Dr. Savage's grouping of insanity is practical and convenient, and the observations on each group are acute, extensive, and well arranged."—*The Lancet*.

Diseases of the Tongue. By H. T. BUTLIN, F.R.C.S., Assistant Surgeon to St. Bartholomew's Hospital. With 8 Chromo Plates. 9s.

"Mr. Butlin may be congratulated upon having written an excellent manual, scientific in tone, practical in aim, and elegant in literary form. The coloured plates rival, if not excel, some of the most careful specimens of art to be found in the pages of European medical publications."—*British Medical Journal*.

Surgical Diseases of Children. By EDMUND OWEN, M.B., F.R.C.S., Senior Surgeon to the Children's Hospital, Great Ormond Street, and Surgeon to, and Co-Lecturer on Surgery at, St. Mary's Hospital. With Chromo Plates and numerous Engravings. *Revised and Enlarged Edition*. 21s.

"Mr. Owen's volume will rank as an invaluable *résumé* of the subject on which it treats, and should readily take its place as a reliable and compact guide to the surgery of children."—*Medical Press and Circular*.

Intestinal Obstruction. By FREDERICK TREVES, F.R.C.S., Surgeon to, and Lecturer on Anatomy at, the London Hospital. Illustrated. *New and Enlarged Edition*, in preparation. 21s.

"Throughout the work there is abundant evidence of patient labour, acute observation, and sound reasoning, and we believe Mr. Treves's book will do much to advance our knowledge of a very difficult subject."—*The Lancet*.

Important Medical Works

Published by **CASSELL and COMPANY.**

Injuries and Diseases of the Genital and Urinary Organs. By HENRY MORRIS, M.A., M.B. Lond., F.R.C.S. Eng. With 97 Illustrations. 21s.

THIRD THOUSAND, price 10s. 6d.

Diseases of the Skin. An Outline of the Principles and Practice of Dermatology. By MALCOLM MORRIS, F.R.C.S. Ed. With 8 Chromo-Lithographs and 17 Woodcuts.

NEW AND ENLARGED EDITION, price 21s.

Surgical Diseases of the Ovaries and Fallopian Tubes, including Tubal Pregnancy. By J. BLAND SUTTON, F.R.C.S. With 146 Illustrations.

Diseases of the Joints and Spine. By HOWARD MARSH, F.R.C.S. With 79 Illustrations. *New and Revised Edition.* 12s. 6d.

Diseases of the Ear. By A. MARMADUKE SHEILD, M.B. Cantab., F.R.C.S. Eng. With 4 Coloured Plates and 34 Woodcut Illustrations. 10s. 6d.

Difficult Labour. A Guide to its Management. For Students and Practitioners. By G. ERNEST HERMAN, M.B. Lond., F.R.C.P. With 162 Illustrations. *Second Edition.* 12s. 6d.

Tumours, Innocent and Malignant; Their Clinical Characters and Appropriate Treatment. By J. BLAND SUTTON, F.R.C.S. With 250 Engravings and 9 Plates. 21s.

CASSELL & COMPANY, LIMITED, *Ludgate Hill, London.*

Cassell & Company's Announcements.

Works by Frederick Treves, F.R.C.S.

Complete in Two Vols., price 48s.

A System of Surgery.

By Various Authors. Edited by FREDERICK TREVES, F.R.C.S., Surgeon to, and Lecturer on Surgery at, the London Hospital; Examiner in Surgery at the University of Cambridge. Each Volume contains Two Coloured Plates and Several Hundred Original Woodcut Illustrations by CHARLES BERJEAU, F.L.S., and others.

A Manual of Operative Surgery.

With 422 Illustrations by C. BERJEAU. Two Volumes. £2 2s.

The Student's Handbook of Surgical Operations. With 94 Illustrations. 7s. 6d.

Surgical Applied Anatomy.

With 61 Engravings. 16th Thousand. 7s. 6d.

Works by I. Burney Yeo, M.D.

FIFTH EDITION, with Illustrations. In Two Vols., price 21s.

A Manual of Medical Treatment ; or, Clinical Therapeutics. By I. BURNEY YEO, M.D., F.R.C.P., Professor of the Principles and Practice of Medicine in King's College.

"A book which deserves, and will doubtless command, a wide circle of readers, who will appreciate its value and utility."—*The Lancet*.

NEW AND ENLARGED EDITION, price 10s. 6d.

Food in Health and Disease.

By I. BURNEY YEO, M.D., F.R.C.P., Professor of the Principles and Practice of Medicine in King's College.

"The book is such an excellent and reliable guide to the very important subject of which it treats that it should be in the possession of every practitioner."—*Sheffield Medical Journal*.

* * * A Catalogue of Cassell & Company's MEDICAL and CLINICAL MANUALS will be sent post free on application.

CASSELL & COMPANY, LIMITED, Ludgate Hill, London ; Paris and Melbourne.

NEW SERIES.

THE PRACTITIONER:

A Journal of Practical Medicine.

Edited by **MALCOLM MORRIS.**

The chief features of THE PRACTITIONER in its new form are :—

- 1. Decrease in price.**
- 2. Increase in number of pages.**
- 3. Enlargement of scope.**
- 4. Greater variety of contents.**

The Yearly Subscription of THE PRACTITIONER, post free, is 10s. 6d.

CASELL & COMPANY, LIMITED, *Ludgate Hill, London.*

ENLARGED SERIES, in MONTHLY PARTS, price 2s., of the

ANNALS OF SURGERY:

A Monthly Review of Surgical Science and Practice.

EDITED BY

W. H. A. Jacobson, M.Ch.
(Of London);

William MacEwen, M.D.
(Of Glasgow);

L. S. Pilcher, A.M., M.D.
(Of Brooklyn, U.S.A.);

J. William White, M.D.
(Of Philadelphia, U.S.A.).

“Annals of Surgery” is the only high-class Journal published in the English language, devoted exclusively to presenting current work in the science and art of surgery.

The names of its Editors are a sufficient guarantee for the sterling character of its contents.

The several departments of *Original Memoirs*, *Editorial Articles*, *Index of Surgical Progress*, and *Reviews of Books* have been developed and extended in such a way as to keep the Journal abreast with current surgical work.

A subscription of One Guinea, paid in advance, will secure the Journal being sent post free for one year.

CASELL & COMPANY, LIMITED, *Ludgate Hill, London.*

ROCK LIFE

Assurance Company.

ESTABLISHED 1806.

Trustees.

JOSEPH GURNEY BARCLAY, Esq.
WILFRED ARTHUR BEVAN, Esq.
The Right Hon. Lord MONK
BRETTON.

CUTHBERT EDGAR PEEK, Esq.
Sir CHARLES RUGGE PRICE, Bart.
The Hon. CHARLES HEDLEY
STRUTT, M.P.

SAMUEL HARVEY TWINING, Esq.

Physicians.


F. DE HAVILLAND HALL, M.D., F.R.C.P.

JAMES BARRY BALL, M.D., M.R.C.P.

WEALTH—SECURITY—STABILITY.

Paid in Claims upwards of **£11,300,000**

Profits divided amongst Policy-holders upwards of **£4,140,600**

 *Members of "The Medical Sickness Assurance Society" can
through that Society obtain Special Terms.*

**LOW PREMIUM RATES FOR
WITHOUT PROFIT POLICIES**

PROVISION FOR OLD-AGE PENSIONS.

**LEASEHOLD SINKING FUND POLICIES—
EDUCATIONAL ANNUITIES—ENDOWMENTS.**

LOANS ON LIFE INTERESTS & REVERSIONS AT MODERATE INTEREST.

Chief Office:—

15, NEW BRIDGE STREET, LONDON, E.C.

GEORGE C. CRISFORD, Actuary.

Application for Agencies invited.



